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Electro-Voice®
200M ENTERTAINER® SERIES

OWNER'S MANUAL

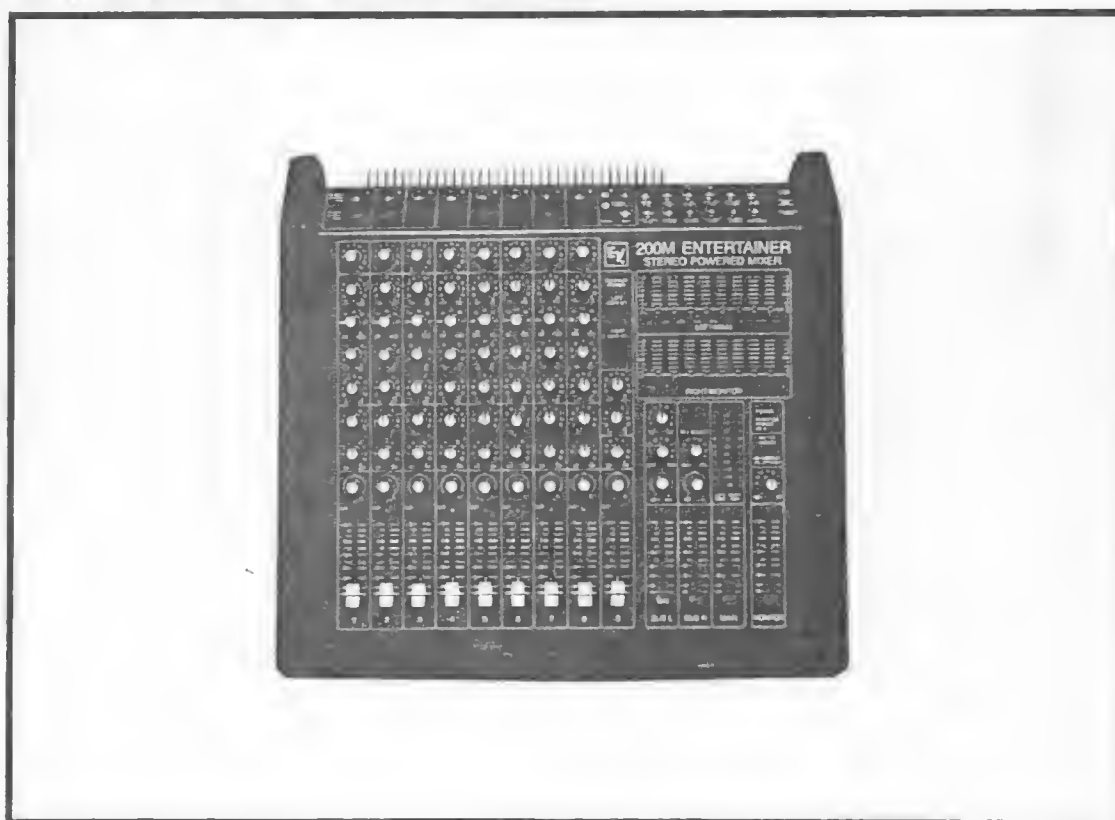


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WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS
EQUIPMENT TO RAIN OR MOISTURE.

FEATURES**Inputs 1 Through 8**

- Transformerless balanced mic/line input
- Gain control
- Clip indicator
- Monitor send
- Effects send
- Three-band EQ, with mid-frequency sweep

Input 9

- Auxiliary input for high-impedance or line-level sources
- Monitor send

Master Section

- Lexicon 16-bit digital effects processor with thirty programs built-in
- Two nine-band graphic equalizers with Constant Range™ for reduced interaction between frequency bands
- Two ten-segment peak-responding LED bargraph meters
- 40-volt phantom power for condenser microphones
- Mono output master control
- Patching access jacks for mixer, equalizers and amplifiers
- Effects send and return system for external effects

Power Amplifier Section

- Two Class-AD switching power amplifiers
- Compressor prevents distortion from clipping
- Power amplifier assign switch which changes between normal stereo operation and mono operation with monitors

DESCRIPTION

The 200M Entertainer mixer is a stereo mixer with nine input channels and two built-in power amplifiers. The unit has a lightweight and durable chassis with a recessed front panel for control knob protection. The mixer's lightweight design combined with its high-power amplifiers make it a step ahead of the competition.

The mixer consists of eight channel inputs which may be used as either a balanced mic input or a high-impedance line input. Each of these channels has a gain control, clip LED, independent monitor send, a three-band equalizer with mid-frequency sweep, effects send, pan control, and slide fader.

The mixer also contains one auxiliary input channel for high-impedance or line-level sources. This channel has an monitor send, pan control, two-band equalizer, and slide fader.

The master section of the mixer is made up of two nine-band graphic equalizers, a Lexicon digital effects processor and master internal effects level controls. The Lexicon processor has thirty user-selectable programs which include echo, reverb, and special effects.

A power amplifier assign switch allows switching between normal stereo operation and mono operation with monitors. The power amplifier assign switch assigns amplifiers and equalizers with no patching required.

Two Class-AD switching power amplifiers deliver 300 watts per channel into 4 ohms. Power Lock™ circuitry prevents amplifier clipping. The amplifiers have short circuit and thermal protection.

Three Electro-Voice accessories complement the 200M mixer. The 200M is compatible with all Electro-Voice Stage systems, however, because of its light weight and small size, the S-200 is the recommended speaker for use with the 200M. The speaker system is a two-way constant-directivity system with a 300-watt long-term power-handling capacity. The system features the EVM® -12S Pro-Line woofer and a high-output version of the Super-Dome™ 1.5-inch tweeter. The S-200 equalizer extends the low-frequency response limit of the S-200 speakers by almost one octave, from 90 to 50 Hz, while providing 4 dB of increased efficiency. A carrying case for the mixer (EPC-200M) is also available.

SPECIFICATIONS

CONDITIONS

1. All noise measurements are made through mic inputs with: 150 Ω source, 20 Hz - 20 kHz noise bandwidth.

2. 0 dBu = 0.775 V rms across any impedance.

POWER OUTPUT

4 Ω load: 300 W/per channel

8 Ω load: 200 W/per channel

FREQUENCY RESPONSE

Power Amplifier: 20 Hz - 20 kHz \pm 1 dB with a 4 Ω load

Mixer: Microphone input to any output, EQ flat, gain controls nominal 20 Hz - 20 kHz \pm 1 dB

THD

Power Amplifier: < 1 % at maximum rated power with a 4 to 8 Ω load

< 0.2 % at 100 W with a 8 Ω load

Mixer: < 0.1 % at +20 dBu, 20 Hz - 20 kHz

NOISE LEVEL

-123 dBu EIN-equivalent input noise, microphone Input (150 Ω termination)

-90 dBu residual at MAIN OUT, MONITOR OUT, SUB L, SUB R (all gain controls at minimum)

-70 dBu residual at MAIN and MONITOR; all Input gain controls at minimum, MAIN and MONITOR at 0 dB

INPUT CHANNEL EQUALIZATION

\pm 15 dB low boost/cut centered at 90 Hz

\pm 12 dB mid boost/cut sweepable from 300 Hz to 5 kHz

\pm 15 dB high boost/cut centered at 10 kHz

SUBMASTER INSERTS

1/4-in. stereo phone jack, tip send, ring return

MICROPHONE INPUTS

Type: low-impedance, balanced, pin 2 positive

Maximum Input Level: +14 dBu (3.9 V rms)

Input Impedance at 1 kHz: 2 k Ω

CLIP INDICATOR THRESHOLD

2 dB below preamp clipping

LINE INPUTS

Type: high-impedance, balanced, tip positive

Maximum Input Level: +30 dBu (24.5 V)

Input Impedance at 1 kHz: 20 k Ω

TAPE INPUTS

Types: high-impedance, unbalanced, tip positive, RCA phono jack, 1/4-in. stereo phone

Input Impedance:

RCA phono: 6 k Ω

1/4-in. phone: 20 k Ω

GRAPHIC EQUALIZER

9-band, Constant Range™, 12 dB boost/cut

Center Frequencies: 50, 100, 200, 400, 800, 1600, 3150, 6300, 12,500 Hz

MAXIMUM VOLTAGE GAIN (\pm 3 dB)

79 dB - MIC IN to MAIN OUT

69 dB - LINE IN to MAIN OUT

79 dB - MIC IN to MONITOR OUT

69 dB - LINE IN to MONITOR OUT

86 dB - MIC IN to EFX SEND

76 dB - LINE IN to EFX SEND

46 dB - TAPE IN(RCA phono) to MAIN OUT

36 dB - TAPE IN (1/4-in.) to MAIN OUT

79 dB - MIC IN to SUB L or R

69 dB - LINE IN to SUB L or R

CROSSTALK

-75 dB - Adjacent Inputs: 1 kHz

-75 dB - Input to output: 1 kHz

-50 dB - All combinations: 20 Hz - 20 kHz

EFFECTS PROCESSOR

16-bit digital, stereo, 15-kHz bandwidth, 30 user-selectable programs

MAXIMUM POWER INDICATOR (FOR EACH CHANNEL)

Lights when compression circuit is activated by clipping

DIMENSIONS

Height: 7.94 in. (20.2 cm)

Depth: 18.25 in. (46.4 cm)

Width: 19.5 in. (49.5 cm)

WEIGHT

38 lb (17.3 kg)

POWER REQUIREMENTS

100/120/220/240 V ac, 50/60 Hz (internal setting)

CASE

Black polyethylene with detachable line cord

OPTIONAL ACCESSORIES

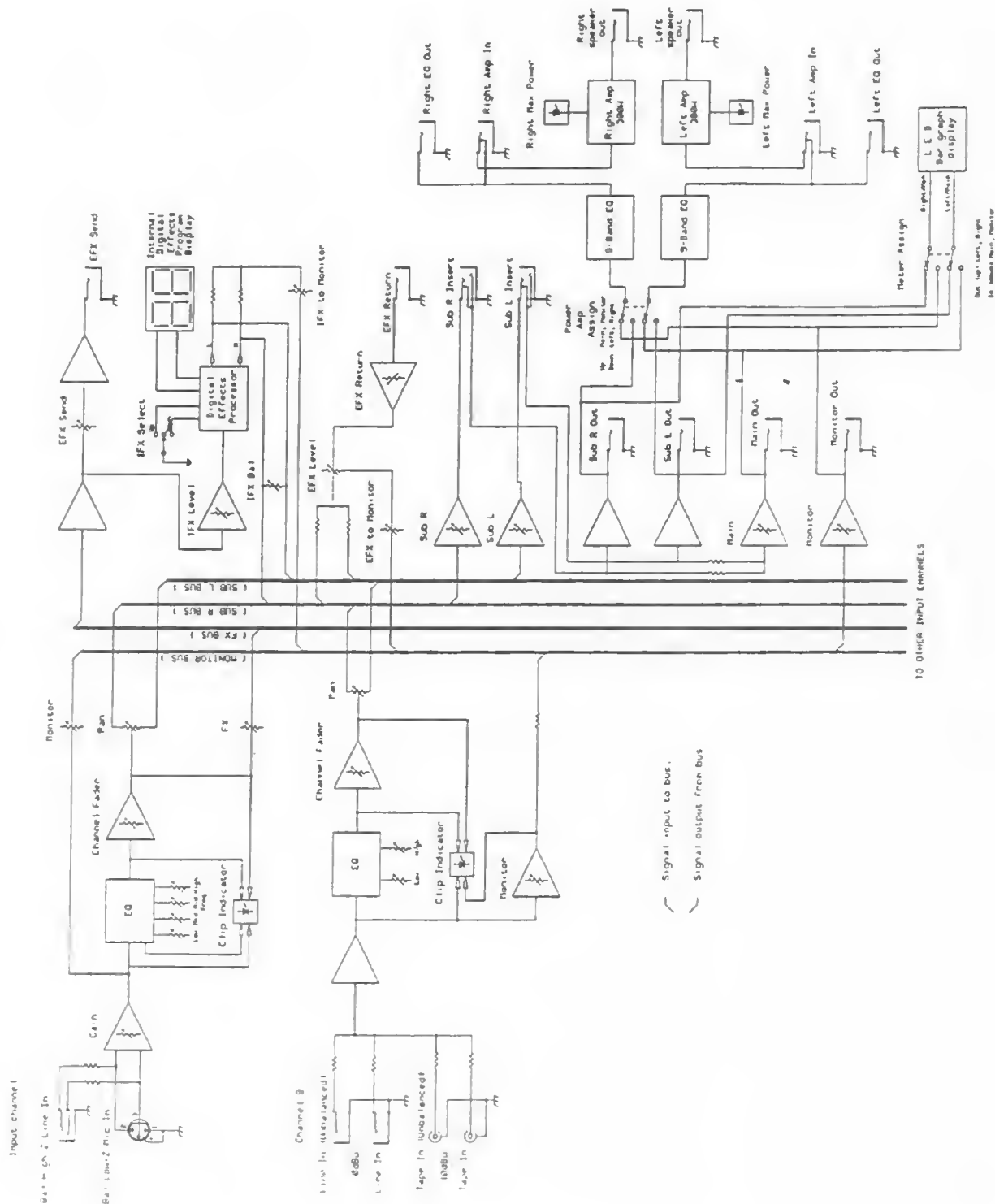
EPC-200M carrying case

S-200 equalizer

S-200 speakers

Specifications subject to change without notice.

BLOCK DIAGRAM



OPERATION

INPUT CHANNEL CONTROLS
(refer to Input Channel Diagram, Pictorial 1)**C. MID EQ: 300 Hz-5 kHz Boost/Cut ± 12 dB**

This control adjusts the midrange content of the input signal.

D. LOW EQ: 90 Hz Boost/Cut ± 15 dB

This control adjusts the low-frequency content of the input signal.

3. FX Send control: The FX Send control determines the amount of input signal sent to the effects bus. It is affected by the channel tone controls and the channel fader.

Since each channel has its own FX control, some channels can have internal or external effects and others none. Note that since the internal and external effects share a common send, they will always have the same sources. Therefore, it is not possible to have internal effects on one input source and external effects on another input source at the same time. It is possible to have internal and external effects simultaneously on both input channels, however.

The FX control may also be used as a mono send. This might be useful for a tape recorder send, for example.

4. MONITOR control: The MONITOR control sets the level of that input signal in the monitor mix. It is independent of all input channel controls except the GAIN control. It is not affected by the channel EQ controls or the channel fader. Thus, it is not affected by changes in the main mix.

5. PAN control: The PAN control allows the channel's input signal to be placed within the stereo image by assigning more or less of the signal to the SUB L or SUB R controls.

Turning the PAN control to the left of center moves the apparent source toward the left speaker, turning it to the right moves the source to the right speaker. Centering the control makes the apparent source centered between the speakers. If all inputs are panned center, the result is mono. Proper use of the PAN control can sometimes help to control acoustic feedback in a sound reinforcement system by "panning" a mic away to the loudspeaker on the opposite side of the stage.

6. Channel Fader: This control adjusts the channel level in the main mix. The normal setting for this control is around the 0-dB mark on the scale.

Each input channel will accept a signal source which may be equalized, have internal or external effects added, sent to a monitor system and sent to the main system for the audience to hear. The input channels have low-impedance mic inputs (the 3-pin female XLR-type connector) and high-impedance mic/line inputs (1/4-inch phone jack). The line input will accept signals from either an instrument, high-impedance microphone, tape deck, drum machine, or almost any other audio source. Always be sure that the channel fader or master faders are down before plugging or unplugging input sources.

1. GAIN control: The GAIN control adjusts the amplification of the input stage. This is necessary to accommodate the wide variation in signal strength presented to the mixer by a variety of signal sources. The GAIN control allows the amplification for each input source to be optimized. This results in the best signal-to-noise ratio and best freedom from overload distortion.

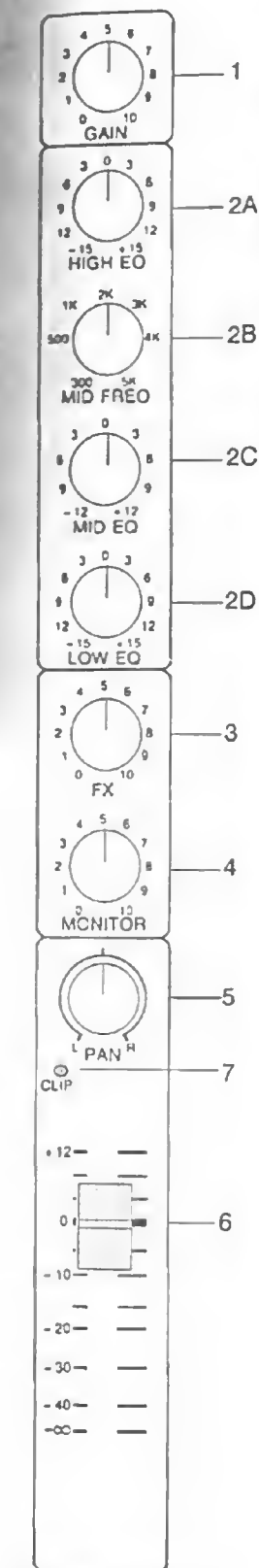
2. EQ controls: Equalization can be more simply described as tone control. The 200M tone controls are of the bandpass type; therefore, extremely high and low (inaudible) frequencies are not affected by these controls.

A. HIGH EQ: 10 kHz Boost/Cut ± 15 dB

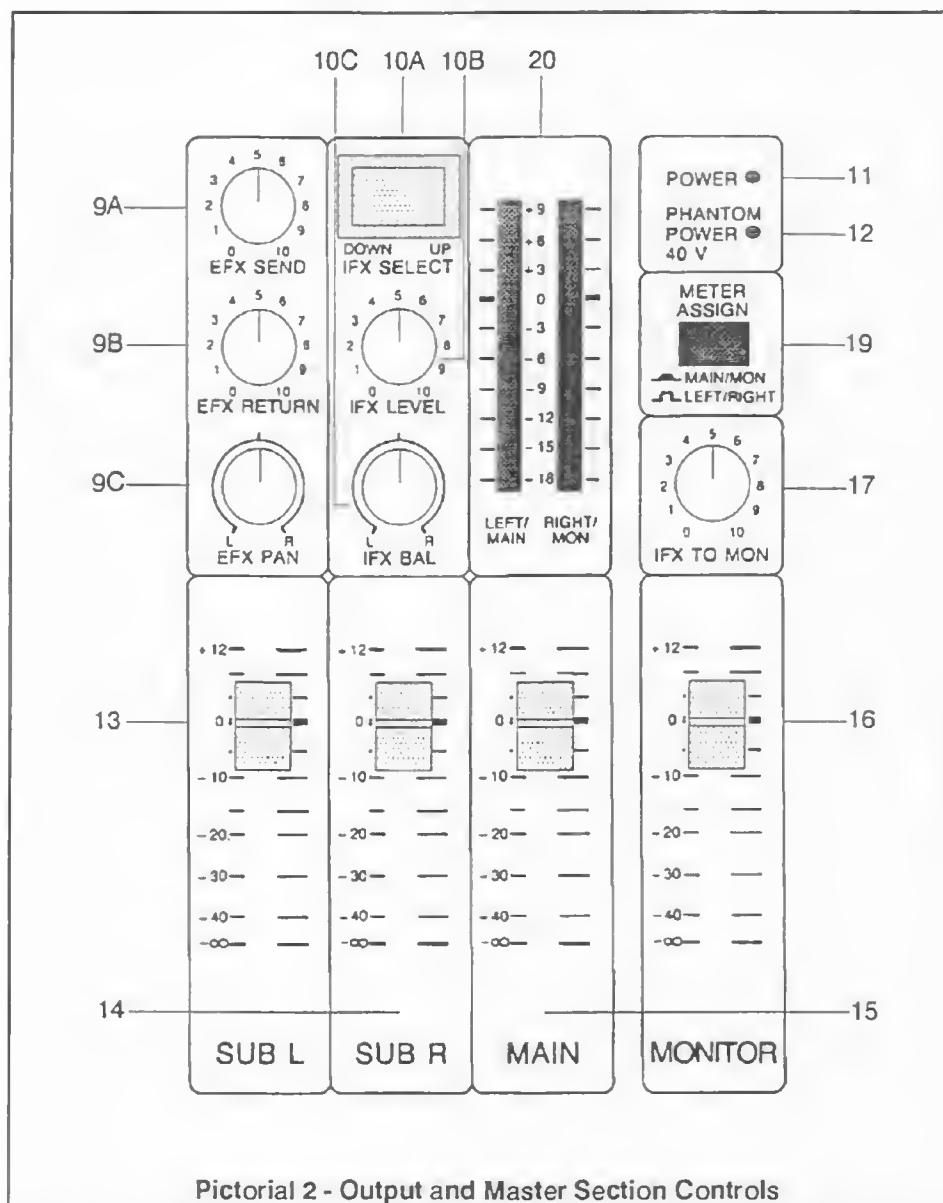
This control adjusts the treble content of the input signal.

B. MID FREQ: 300 Hz-5 kHz

This control sets the center frequency of the MID EQ (the frequency of the maximum peak or dip).



Pictorial 1- Input Channel Diagram



7. CLIP indicator: The channel CLIP indicator monitors the entire input channel circuit for clipping or overload. If the LED lights, the signal is bordering on distortion. This might be caused by excessive equalization on the channel tone controls, a gain control setting that is too high for the input signal, or a channel fader that is set too high. Generally, reducing the GAIN control will eliminate clipping.

8. Channel 9 (tape input): The tape input is a high-impedance line input. It may be used for a tape deck, cd player, keyboard, drum machine, or other instrument. See page 8, Pictorial 4.

OUTPUT SECTION CONTROLS (refer to Output and Master Section Controls, Pictorial 2)

9. Effects Section:

A. EFX SEND Master control: The EFX SEND master control sets the level of the signal at the EFX SEND output jack going to any type of outboard effects devices such as a delay. It does not affect the signal being sent to the internal digital effects system. The source for this signal is the individual FX level controls on input channels 1 through 8.

B. EFX RETURN control: The EFX RETURN level control determines the level of externally generated effects signals in the main mix. This signal is mixed into the left and right submaster outputs. It will mix into the mono output.

C. EFX PAN control: The EFX PAN control adjusts where the externally generated effects are placed in the stereo image.

10. Internal Effects section: A Lexicon 16-bit stereo digital effects system is built into the 200M mixer. Thirty programs may be selected for different internal effects. The available programs are described in Table 1, page 22.

A. IFX SELECT switch: This switch is used to select the number of the desired internal effects program (1 through 30).

B. IFX LEVEL control: This control adds internal effects to the main (stereo and mono) outputs from any input channel signal (inputs 1 through 8) whose FX control is turned up.

C. IFX BALANCE control: This control adjusts the left-to-right balance of the digital effects system.

11. POWER indicator: This green LED indicates whether the mixer is on or off.

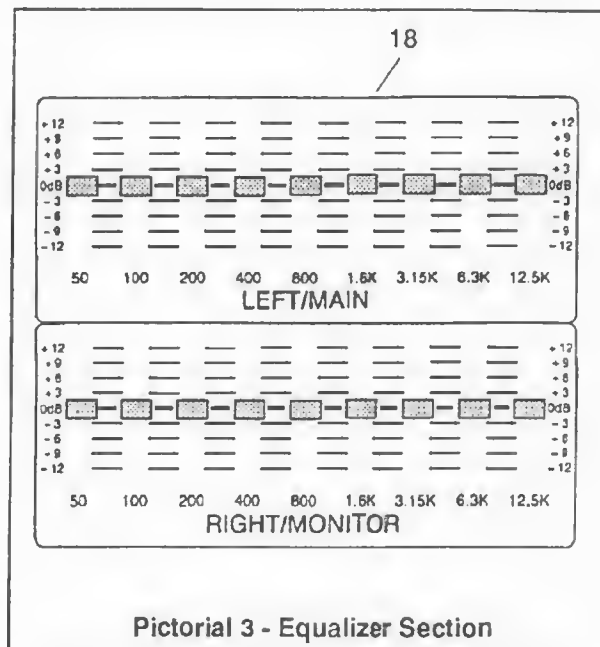
12. PHANTOM POWER indicator: This green LED indicates the presence of 40 volt phantom power at the microphone inputs (XLR connectors only). Phantom power is turned on and off from a switch on the rear panel. Phantom power allows the simultaneous use of dynamic and condenser microphones, while eliminating the need for the batteries sometimes associated with powering condenser microphones.

MASTER SECTION CONTROLS (refer to Output and Master Section Controls Diagram, Pictorial 1, page 5)

13. SUB L control: This control adjusts the level of the left stereo output channel. In mono mode, the control is used as the left submaster.

14. SUB R control: This control adjusts the level of the right stereo channel. In mono mode, it is also used as the right submaster.

15. MAIN Master control: The Main output is a mix of the left and right submaster outputs. The MAIN Master controls the level of the mono output.



16. MONITOR Output control: This control adjusts the level of the monitor output signal. The monitor output is a mix of the individual channel monitor sends.

17. IFX TO MON control: This control adds internal effects to the monitor mix.

EQUALIZER CONTROLS (refer to Equalizer Section Diagram, Pictorial 3)

18. Dual 9-Band Graphic Equalizers: The Dual 9-Band Graphic Equalizers in the 200M enhance its versatility. While graphic equalizers are typically used for feedback reduction, they may also be used as a tone control system for special tonal effects or perhaps just the overall shaping of the sound system's response. The equalizers are Constant Range™ which provides optimum coverage of the intended frequency range at all control settings.

Each of the graphic equalizers can boost or cut any (or all) of the 9 bands up to 12 dB.

The equalizers are connected to the 200M's mixer section output through the POWER AMP ASSIGN switch. The POWER AMP ASSIGN switch determines the usage of the equalizer channels, along with the power amplifier channels.

METER SECTION (refer to the Output and Master Section Controls, Pictorial 2, page 6)

19. METER ASSIGN switch: The METER ASSIGN switch allows the left and right bargraph displays to be assigned in either of two ways:

A. If the METER ASSIGN switch is in the In position, the left bargraph will indicate the main output level, while the right bargraph will indicate the monitor output level.

B. If the METER ASSIGN switch is in the Out position, the left bargraph will indicate the left (SUB L) output level, while the right bargraph will indicate the right (SUB R) output level.

20. Left and Right Bargraph displays: The meter section uses dual ten-segment (peak-responding) LED bargraph displays. The displays are calibrated in dBu. +9 dBu on the display corresponds to full power from the Internal amplifiers.

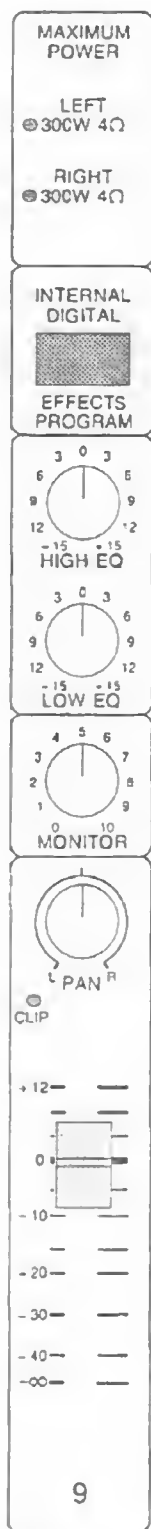
21. Left and Right MAXIMUM POWER indicators: These Indicators signal the activation of the anti-clipping circuit. The output of each amplifier is monitored individually for clipping (distortion). When clipping is detected, the amplifier gain is automatically reduced just enough to keep the amplifier output from clipping. If the input signal should increase further, the gain is reduced further, but just enough to prevent clipping.

Occasional flashing of the LEDs is normal. Sustained operation of the LEDs, while not harmful in itself, is an indication of amplifier overdrive (operating the system beyond its limits); the output level should be reduced. With the indicators on continuously or most of the time, the 200M will not get significantly louder, regardless of how much travel is left on any of the volume controls. One possible cure is to simply turn the SUB L and SUB R controls down. Another possibility is

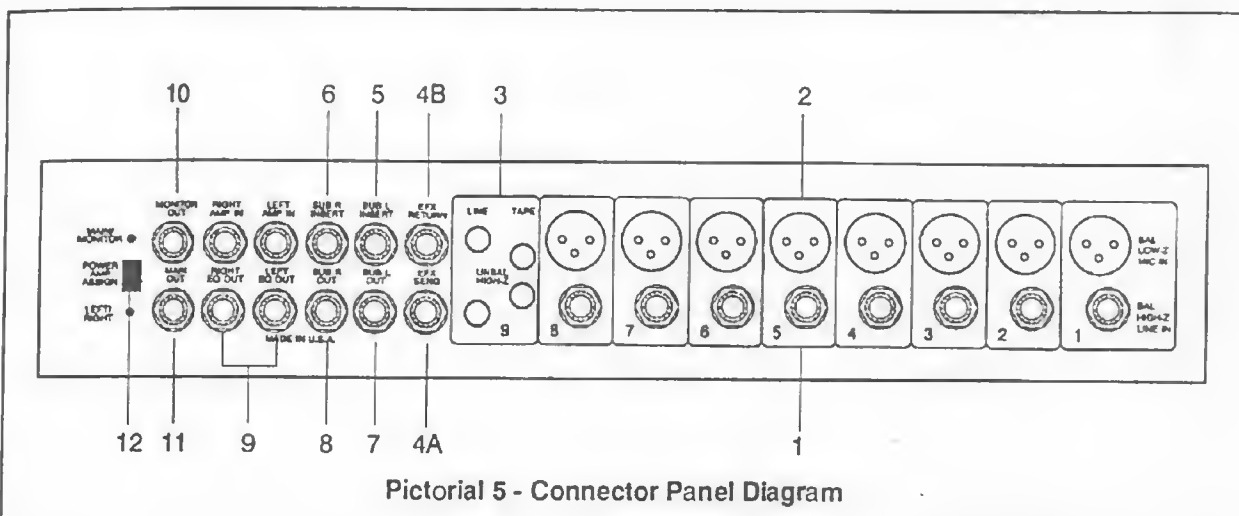
to obtain additional power amplifiers and speakers if more volume and/or coverage is needed.

Remember, the MAXIMUM POWER LEDs do not indicate amplifier clipping, rather, they indicate the activation of the protection circuitry. If it weren't for the protection circuitry, the signal would have been clipped, causing distortion.

22. INTERNAL DIGITAL EFFECTS PROGRAM display: This digital display indicates the number of the selected internal effects program. The available programs are described in Table 1, page 22.



Pictorial 4 - Channel 9 Controls



OPERATION

CONNECTOR PANEL (refer to Connector Panel Diagram, Pictorial 5)

1. Balanced High-Impedance/Line Inputs (BAL HIGH-Z LINE IN): The High-Impedance/Line inputs (channels 1-8) accept a standard 1/4-inch phone plug. A 3-conductor or 2-conductor plug may be used. With a 3-conductor plug, the tip is + and the ring is -. A 2-conductor plug will unbalance the input. Use shielded cable for these connections. The inputs may be used for any of the following sources:

- a. high-Impedance microphones
- b. CD player
- c. keyboards or synthesizers
- d. drum machines
- e. tape machines (playback)
- f. turntables (with external RIAA preamp)
- g. signals from another mixer
- h. any source with an output level from -40 to +26 dBu or .01 to 15 volts

2. Balanced Low-Impedance Microphone inputs (BAL LOW-Z MIC IN): The Low-Impedance input jacks (channels 1-8) accept signals from a balanced, low-impedance source, such as a microphone. Do not connect or disconnect microphones with the volume (channel or master) controls turned up. Loud noises will result. Shielded cable must be used for all microphone connections. These inputs will accept any of the following sources:

- a. balanced, low-impedance dynamic microphones

- b. balanced, low-impedance condenser microphones
- c. phantom power compatible condenser microphones
- d. balanced, low-impedance outputs from Instruments
- e. the balanced, low-impedance output of a direct box
- f. any balanced, low-impedance microphone-level source

Each of these Inputs has phantom power available for powering certain condenser microphones. Dynamic microphones (or any of the above sources) may be used simultaneously without damage. Since phantom power is a compatible system, one switch is provided for all inputs.

3. TAPE inputs: The TAPE inputs are all unbalanced, high-impedance jacks. The RCA phono jacks will accept inputs with a nominal level of -10 dBu (consumer audio equipment). The standard 1/4-inch phone jack will accept inputs with nominal levels of +4 dBu (pro audio gear). The RCA and 1/4-inch jacks may be used simultaneously; their signals will be summed together. Use the output level controls on the individual input devices to adjust the relative levels between the two signals. Only 2-conductor plugs may be used with these unbalanced inputs. These inputs can be used for:

- a. CD or tape player
- b. turntables (with suitable RIAA preamp)
- c. effects returns
- d. keyboards
- e. another mixer's output signal
- f. output signal from a movie projector or VCR
- g. drum machines
- h. any line-level source

Like the other mixer inputs, shielded cable must also be used here.

4. EFX SEND and RETURN connections: These jacks allow external effects such as a reverberation unit, chorus unit, or digital delay device to be connected to the 200M.

A. EFX SEND connector

This jack sends the output signal from the mixer to an external effects device.

B. EFX RETURN connector

Once the signal has been sent to an effects unit for processing, it must be returned to the mixer. The EFX RETURN jack requires a standard 1/4-inch phone plug. The signal from this jack is controlled by the EFX RETURN control.

Regardless of the effects used with the 200M, it is extremely important that any "Blend" control on the effects unit be set at 100% or full effect. If not, expect overall volume changes when the EFX RETURN is used.

5. SUB L INSERT connector: This jack is for adding external signal processing devices to the left submaster mix. The plug should be a tip-send, ring-return type.

6. SUB R INSERT connector: This jack is for adding external signal processing devices to the right submaster mix.

7. SUB L OUT connector: This output is the sum of all the inputs (channels and external) which are assigned to the left submaster bus.

8. SUB R OUT connector: This output is the sum of all the inputs (channels and external) which are assigned to the right submaster bus.

9. LEFT AMP IN, RIGHT AMP IN, LEFT EQ OUT, RIGHT EQ OUT connectors: These jacks allow patching between the 200M's graphic equalizers and power amplifiers. The jacks may be used to:

- a. patch both internal amplifiers to one graphic EQ output
- b. patch either graphic EQ output to an external amplifier
- c. separate the internal amplifiers completely from the 200M's mixer and equalizer circuitry

d. patch from the graphic EQ output directly to a tape recorder for recording, where the effect of the EQ is desired

e. patch in external equalizers, such as the S-200

The equalizers' output jacks and the amplifier input jacks are "normaled"; therefore, patch cords are not needed for operation. The equalizer output jacks may be used without disrupting the signal flow to the internal power amplifiers, however, the amplifier input jacks will interrupt the signal coming from the graphic EQ section when a plug is inserted.

The signals at the equalizer output jacks are line level and can drive power amplifiers or other line-level devices.

The power amplifier input jacks require line-level signals (+10 dBu for amp clipping).

Use shielded cable for all connections at this point.

10. MONITOR OUTPUT connector: The MONITOR OUTPUT is the mix of signals from the channel MONITOR Send controls.

11. MAIN OUTPUT connector: The MAIN OUTPUT is a mix of the left and right (SUB L and SUB R) outputs. It is affected by the settings of the SUB L and SUB R controls. The mix level is adjusted by the MAIN control. This output may be used simultaneously with the SUB L and SUB R outputs (see above) or any of the other outputs.

The Main output can also be used to advantage where the 200M has to drive an external sound system. For example:

- a. the 200M is used in a large room and the "house system" could be used for additional coverage.
- b. the 200M is used for a keyboard mixer/amplifier with a large PA system

Both of these situations can be covered by the use of the mono output, through a direct box or a high-to-low-impedance transformer such as the EV 502 CP. Plug the high-impedance side of the transformer into the mono output of the 200M. Plug the low-impedance side of the transformer into the house PA. Adjust the output level to house PA with the MAIN master control. A relatively low setting will be required.

12. POWER AMP ASSIGN switch: The POWER AMP ASSIGN switch controls the assignment of the 200M's graphic equalizers (and amplifiers if not reassigned by patching).

If the POWER AMP ASSIGN switch is in the down position, the left equalizer is assigned to the left submaster (SUB L OUT) output and the right equalizer is assigned to the right submaster (SUB R OUT) output.

If the POWER AMP ASSIGN switch is in the up position, the left equalizer is assigned to the main (MAIN OUT) output, and the right equalizer is assigned to the monitor (MONITOR OUT) output.

REAR PANEL CONTROLS AND CONNECTIONS (refer to Rear Panel Diagram, Pictorial 6)

1. POWER switch: This switch turns the entire 200M on and off.

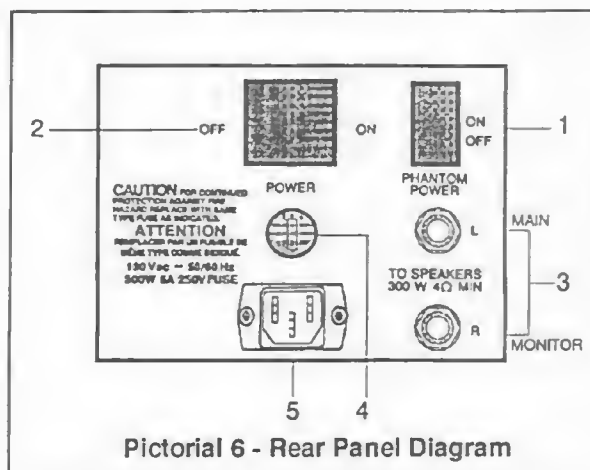
2. PHANTOM POWER switch: The PHANTOM POWER switch controls the internal 40-volt phantom power supply. Phantom powering is a compatible system, therefore normally used dynamic microphones may be used alongside phantom-powered condenser microphones without damage.

Phantom powering imposes certain demands on cables and microphones used. Since microphone cables carry the electrical power that operates the microphones, all solder connections within the mic connectors must be of high quality. Otherwise, extraneous noise may occur.

3. Left and Right Amplifier Output Connectors: These 1/4-inch jacks are for connecting the speakers.

4. Fuse Holder: This fuseholder requires a 6-A, fast-blow fuse.

5. IEC Connector: This connector is for the supplied ac power cord.



APPLICATIONS

This section deals with some of the more common setups for the 200M. Each one will begin with the basics and end with additional refinements or special situations.

STEREO PA WITH S-200 EQUALIZER (See Figure 1)

The 200M may be used as a stereo mixer-amplifier. Its versatility allows it to stand alone, or be the nucleus of a much larger system. In this system,

each microphone feeds one input on the 200M. One speaker is driven from each amplifier output. The **POWER AMP ASSIGN** switch is set to the **LEFT/RIGHT** (stereo) position. The mono mixer output could be used to drive an external system. An external amplifier is needed for monitors, if used.

Procedure:

1. The following equipment is required: the 200M, two S-200 speakers one S-200 equalizer and microphone(s).

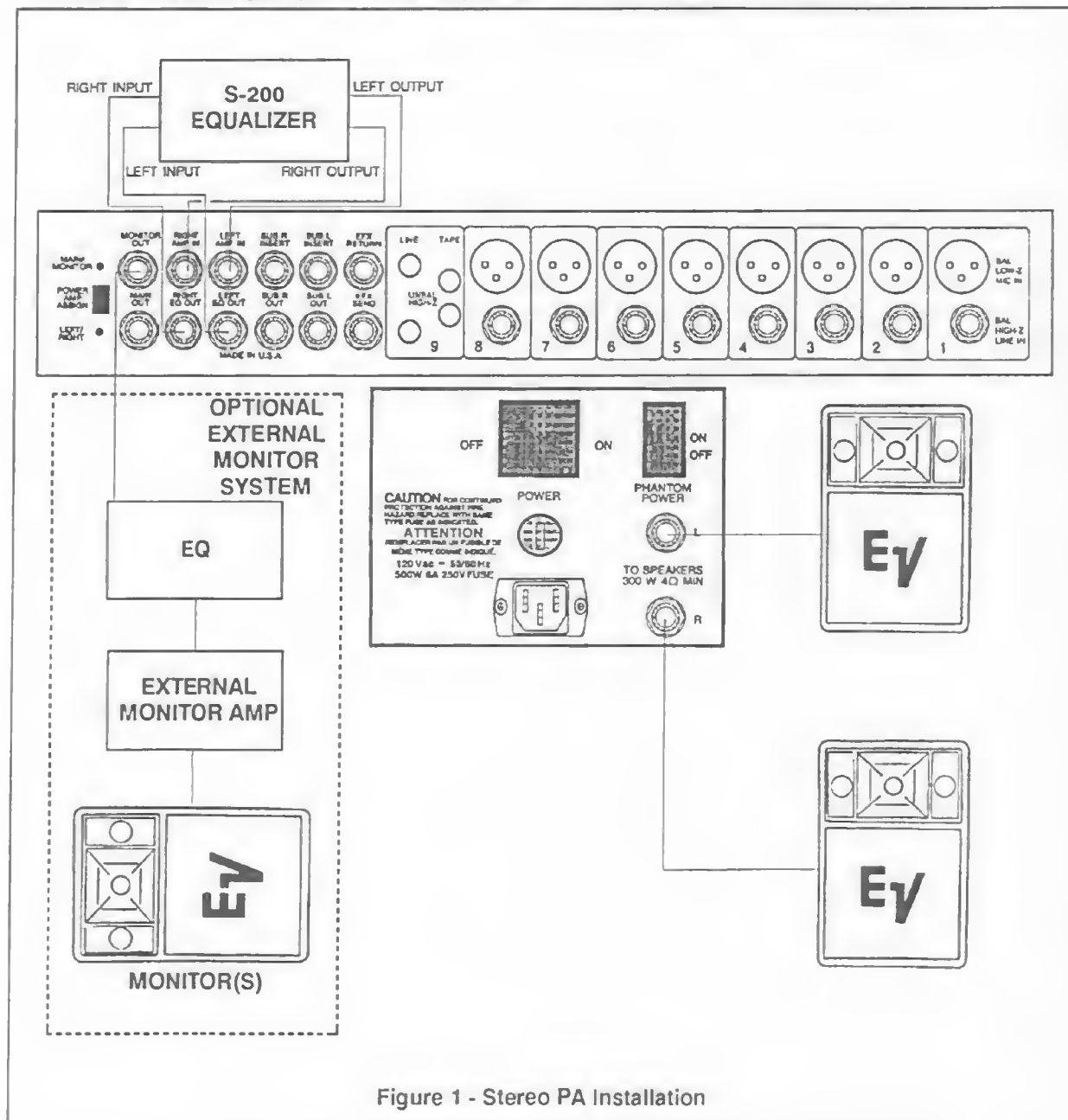


Figure 1 - Stereo PA Installation

2. Set the speakers up on each side of the stage area.
3. Place the 200M in a convenient location.
4. Plug the 200M's power cord into an ac outlet, but **do not** turn the unit on.
5. Plug the S-200 speakers into the left and right amplifier output jacks.
6. Connect the LEFT EQ OUT jack to the left input of the S-200 equalizer. Similarly, connect the RIGHT EQ OUT jack to the right input of the S-200 equalizer.
7. Plug the LEFT AMP IN jack of the 200M to the left output of the S-200 equalizer. Similarly, plug the RIGHT AMP IN jack of the 200M to the right output of the S-200 equalizer.
8. Set the SUB L and SUB R controls to their lowest setting and all graphic equalizer controls to the 0-dB mark (centered).
9. Set the POWER AMP ASSIGN switch to the LEFT/RIGHT position.
10. If condenser microphones are connected, turn the PHANTOM POWER switch on.
11. Turn on the 200M.
12. Adjust the GAIN controls to the 12 o'clock position.
13. Set the channel PAN and EQ controls to about the 12 o'clock position.
14. Set the channel faders to the 0-dB setting on their scale.
15. Bring up the SUB L and SUB R controls slowly while speaking into one of the microphones until sound is heard.
16. If the CLIP indicators on any channel illuminate, use a lower GAIN control setting. If the GAIN setting is too low, turn the GAIN control up until the CLIP indicators just begin to light, then turn them down slightly.
17. If feedback is heard before sufficient volume is reached, identify the frequency range of the feedback and pull down the corresponding equalizer control until it stops.

18. Monitors will require an amplifier. An external equalizer is optional.

MONO PA (See Figure 2)

The 200M may also be used as a mono mixer-amplifier. Again, its versatility allows it to stand alone, or be the nucleus of a much larger system.

Use the mono mode of the 200M in situations where seating or other physical constraints prevent audience members from hearing both loudspeaker systems. Use of the stereo mode in this situation might cause some listeners to only hear part of the material.

In mono use, the two stereo mixing channels of the 200M may be used as subgroups, allowing the various inputs to the mixer to be grouped; for example, the vocals and instruments.

To group the vocals and instruments:

1. Assign vocals to the left submaster by panning all vocal sources to the left using the input channel PAN control.
2. Assign all Instrument sources to the right submaster by panning all instrument sources to the right using the input channel PAN control.
3. The left submaster is now the vocals master and the right submaster is the instruments master. Control the overall level using the MAIN Master control.

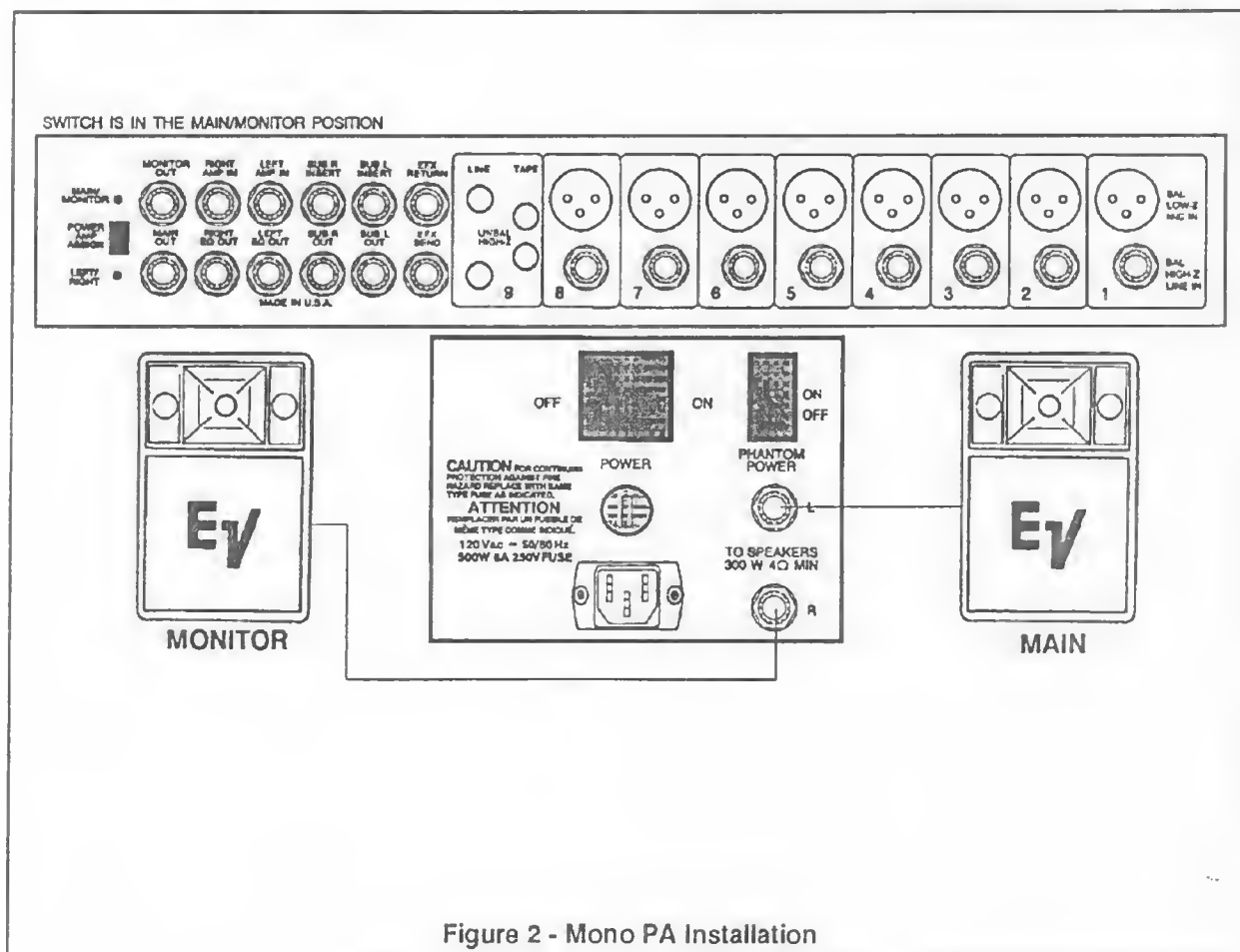
In this system, stage monitors are shown. They are driven from one of the internal power amplifiers. The MAIN/MONITOR mode of the POWER AMP ASSIGN switch on the back panel must be selected. No additional patching is required.

The monitor speakers used with the 200M can be any high-quality monitor speaker. The S200 speakers make excellent monitors. Remember, any of the following combinations of monitors may be used: one 4-ohm monitor, two 8-ohm monitors or four 16-ohm monitors driven from one channel of the 200M. Additional monitors or more powerful amplifiers can be connected.

Procedure:

1. The following equipment is needed: the 200M, two S-200 speakers and microphones. Monitor

- speakers are optional.
- Set up the speakers on each side of the stage area.
 - Place the 200M in a convenient location.
 - Plug the 200M's power cord into an ac outlet, but **do not** turn the unit on.
 - Plug the S-200 speakers into the left and right amplifier outputs.
 - Set the SUB L and SUB R controls to their lowest setting. Set all graphic equalizer controls to the 0-dB mark (centered).
 - Put the POWER AMP ASSIGN switch in the MAIN/MONITOR position.
 - If condenser microphones are connected, turn the PHANTOM POWER switch on.
 - Turn the 200M on.
 - Adjust the GAIN controls to about the 12 o'clock position.
 - Set the PAN and EQ controls to about the 12 o'clock position.
 - Set the channel faders and the SUB L and SUB R controls to the 0-dB setting on their scales.
 - Turn up the MAIN Master slowly while speaking into one of the microphones until sound is heard.
 - If the CLIP indicators on any channel light, use a lower GAIN control setting. If the GAIN setting is too low, turn the GAIN control up until the CLIP indicators just begin to light, then turn them down slightly.
 - If feedback is experienced before a sufficient volume is reached, identify the frequency range of the feedback and pull down the corresponding equalizer control until it stops.



16. Connect monitors to the right amplifier output. Set up a monitor mix using the individual monitor pots. Slowly bring up the MONITOR Master control. Use the right graphic EQ to minimize feedback.

USING A TAPE RECORDER (See Figure 3)

There are several points at which a tape recorder can be hooked up to the 200M in order to record:

1. stereo outputs
2. mono output
3. equalizer outputs
4. monitor send
5. effects send

The stereo and mono outputs are not affected by the graphic equalizers in the 200M. Use these outputs for the majority of recording hookups, especially when the equalizers are being used to correct a feedback problem or poor room acoustics.

The equalizer outputs can be used for a tape recording. Best results from these outputs are obtained when the equalizer is not being used, or when it is used for general response shaping.

For specialized applications, the monitor and/or effects outputs may be used. The MONITOR output has the attribute of being independent of nearly all the mixer's controls. Conversely, the EFX SEND is affected by nearly all the input channel controls. Use either of these when a special mono mix goes to the tape recorder. For example:

1. A conference is being recorded and all microphones connected to the 200M need to go to the tape recorder regardless of the settings of the individual faders. For this, choose the MONITOR send, since its signal source is pre fader, pre EQ.
2. A recording of the board output is desired, but for one reason or another, the mix available at the mono output just isn't quite right (some things are too loud, other things aren't loud enough).

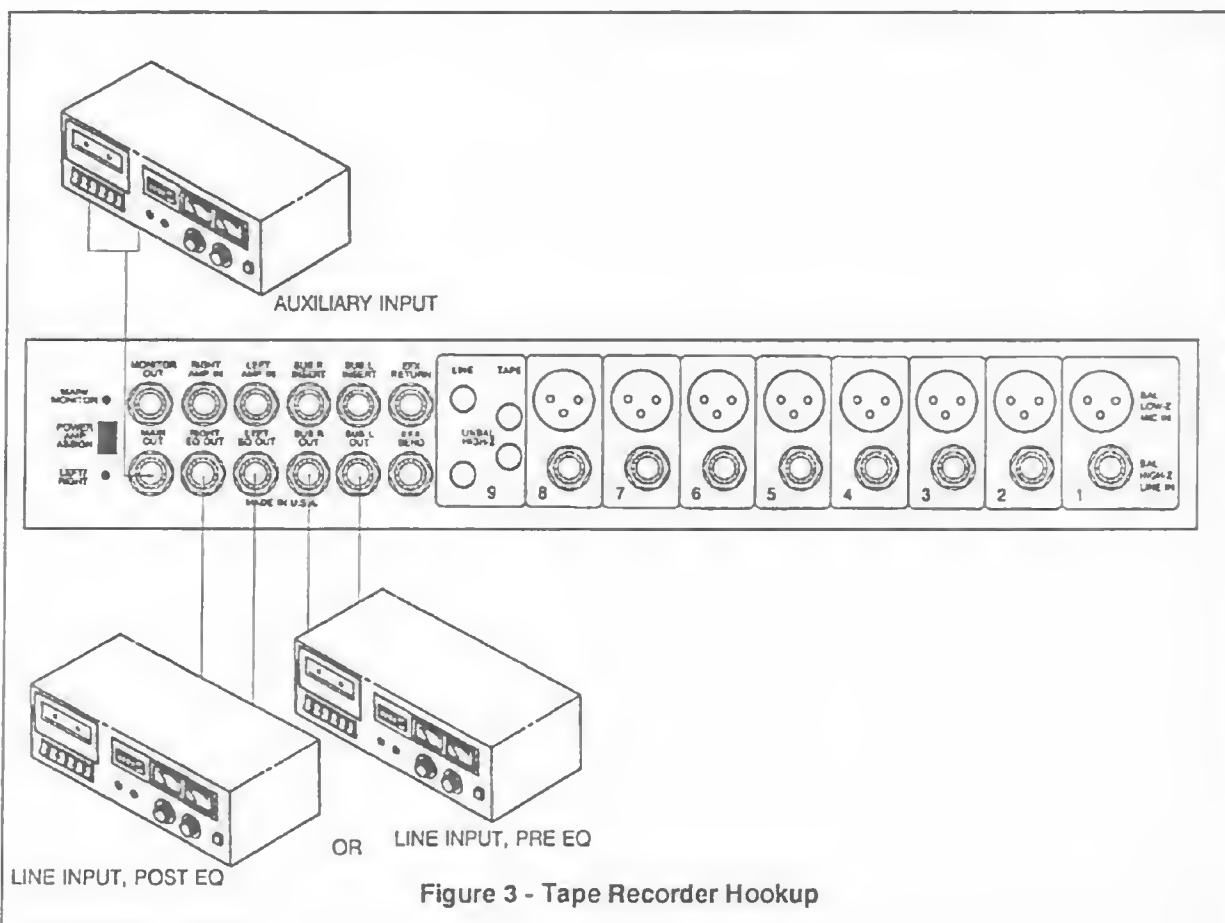
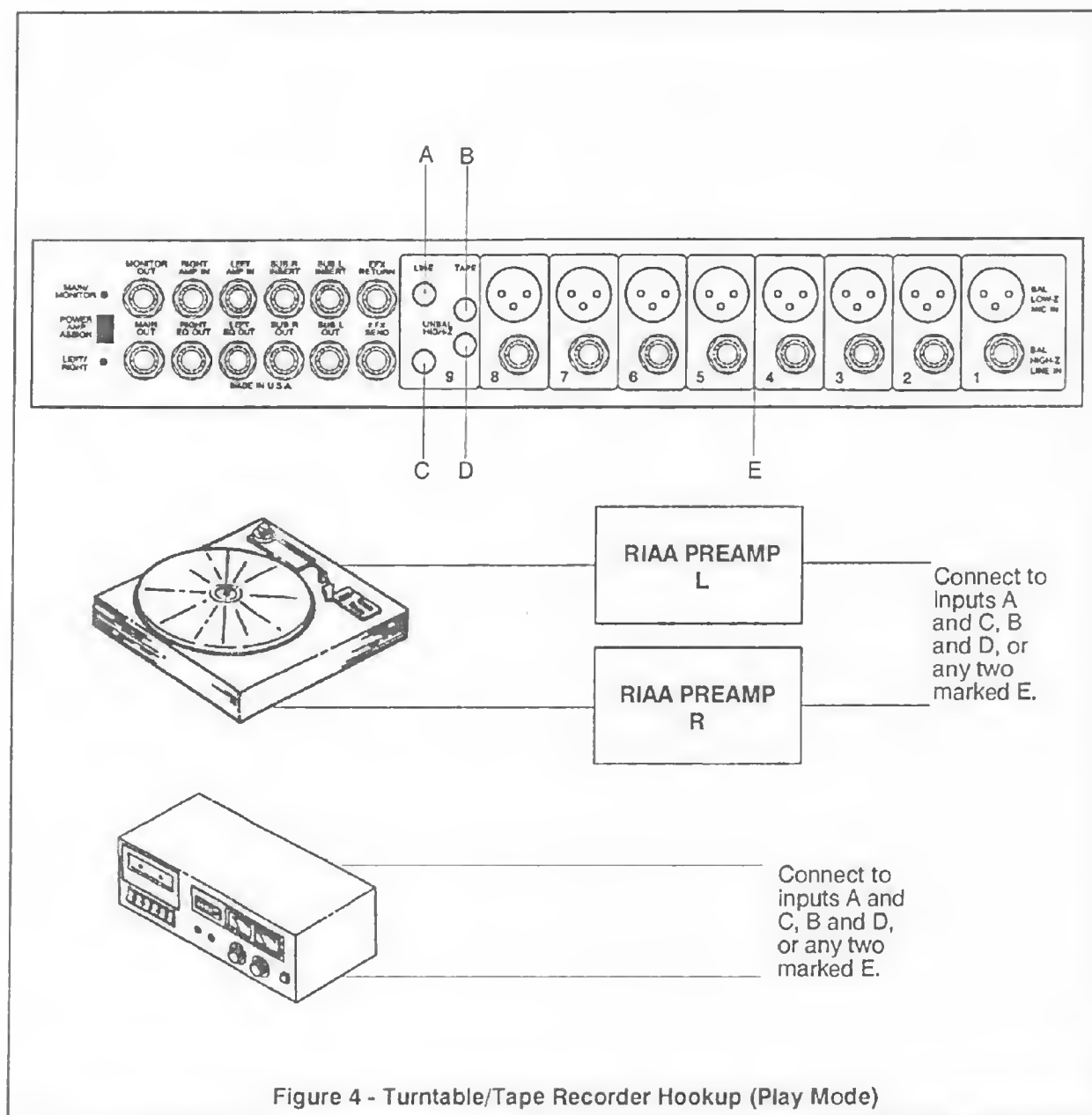


Figure 3 - Tape Recorder Hookup



Use the EFX SEND and the individual FX sends to balance out the various inputs once everything is relatively set in the mains. Since the EFX SEND is post fader, post EQ, the recording will follow any changes made in the main mix, but with the altered perspective given it by the FX send controls.

If any of the above outputs are being used to drive an additional device, use a Y-cord to connect the tape machine. There's plenty of drive available from the mixer's output.

CAUTION: DO NOT HOOK UP A TAPE RECORDER TO THE AMPLIFIER OUTPUTS.

USING A TAPE PLAYER OR TURNTABLE (See Figure 4)

There are several points at which a tape machine or turntable (with RIAA preamp) may be connected to play back through the 200M.

- A. through an input channel line input.
- B. through a TAPE input
- C. through the EFX RETURN

If an Input channel is used, the following can be done to the tape machine signal:

1. Send the signal to the MAIN outputs and pan it between the speakers.
2. Send the signal into the monitors.
3. Equalize the signal with the tone controls.
4. Add reverb to the signal.

If TAPE input 9 is used, the following can be done:

1. Send the signal to the MAIN outputs and pan it between the speakers.
2. Send the signal to the monitors.

If the EFX RETURN is used, the following can be done:

1. Send the signal to the main outputs.

If the source is stereo, separate inputs must be used (one panned left, the other right) to maintain stereo separation. Otherwise, the sound is mono!

HOOKING UP INSTRUMENTS DIRECTLY

Instruments are best connected to the 200M through one of the eight High-Impedance/Line inputs or to one of the eight Balanced Low-Impedance Microphone inputs through a direct box or matching transformer (EV #502CP).

Instruments having high output levels may be connected to input 9. If sound levels aren't high enough, use inputs 1 through 8.

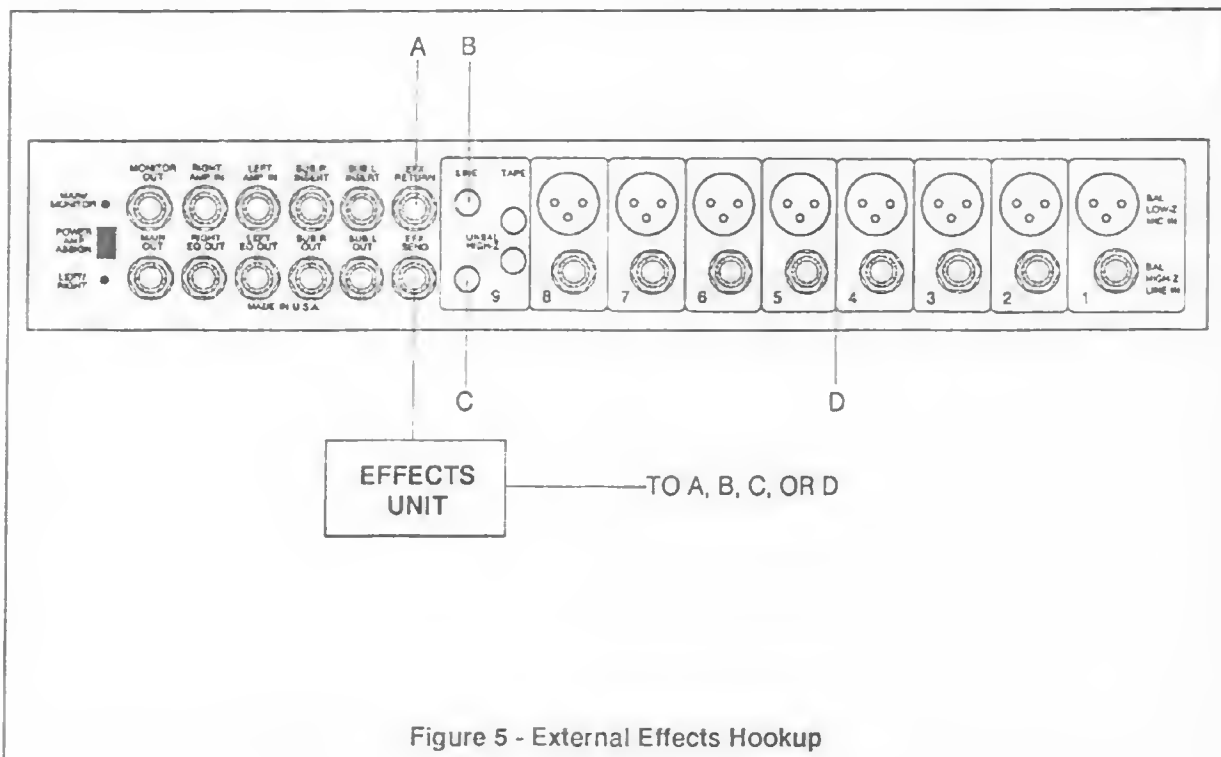
EXTERNAL EFFECTS (See Figure 5)

External effects are easily connected to the 200M. Several points in the 200M's mixer section may be used for effects returns beside the EFX RETURN input. These are:

1. Line inputs 1 through 8
2. Line input 9

Using any of these inputs allows the effects signal into the monitors as well as the mains. Simply turn up the MONITOR Send control on the effect return channel.

Be certain that the blend or mix control in the external effects device is set to the maximum or 100% posi-



tion. Failure to do this may result in overall volume changes as the effect is brought in and out.

RE-PATCHING THE EQUALIZERS

Figures 6 and 7 illustrate the various ways that the equalizer outputs may be used.

1. Driving an external monitor amplifier (Main/Monitor mode). See Figure 6.
2. Driving an external amplifier for a stereo system (Left/Right mode). See Figure 7.
3. Driving an electronic crossover for biampified system. Use LEFT and RIGHT EQ OUT (for stereo) or MONITOR OUT (Left/Right mode).

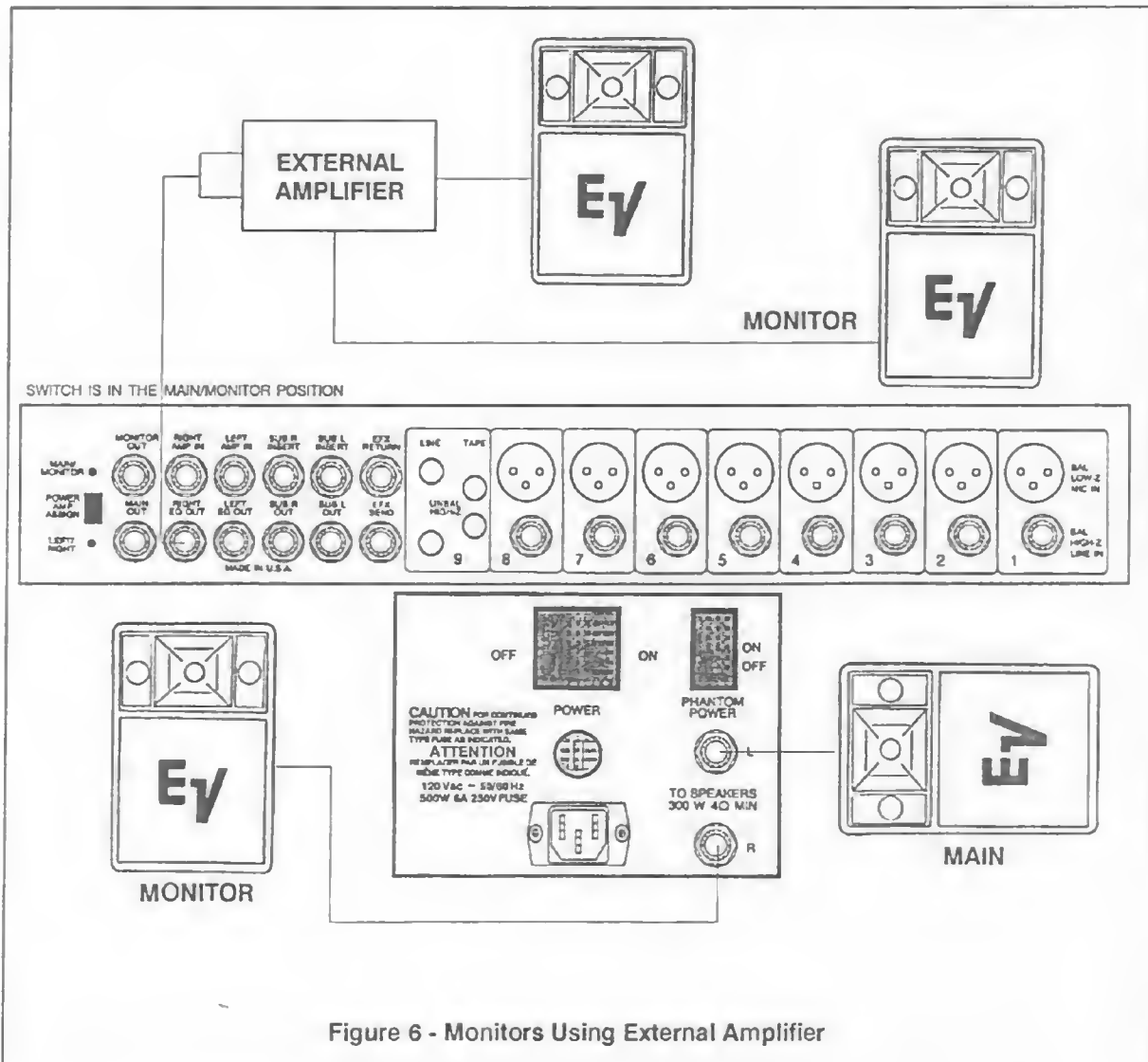
RE-PATCHING THE AMPLIFIERS

Figures 8 and 9 illustrate the various ways that the amplifier input jacks can be used.

1. Both amplifiers can run the monitors. See Figure 8.
2. Both amplifiers can drive main speakers in mono (See Figure 9).
3. The amplifiers can be separated from the 200M mixer section and driven from an external source.

MONITORS (See Figure 6)

If monitors are used, consider the following:



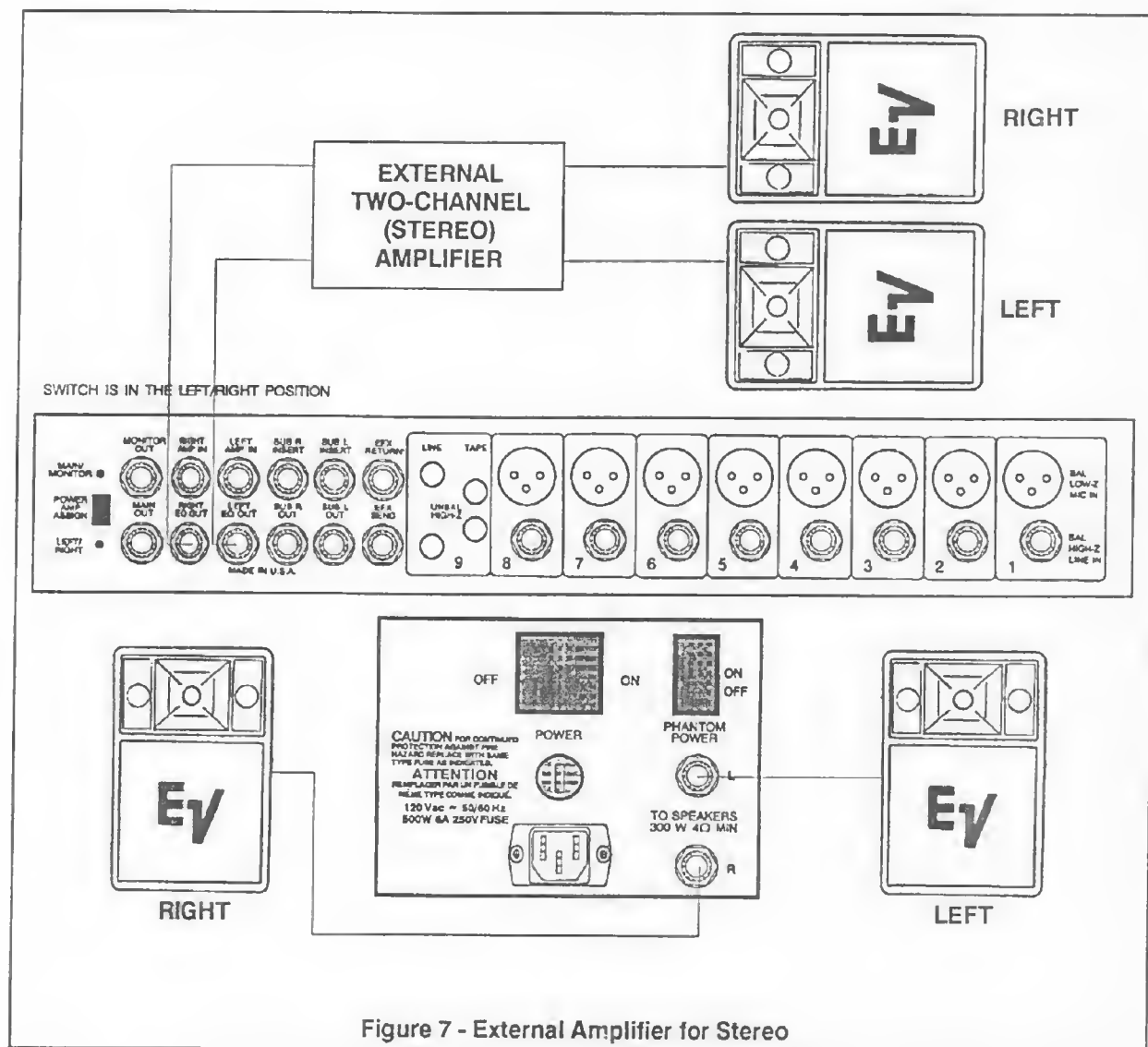


Figure 7 - External Amplifier for Stereo

1. Cardioid (unidirectional) microphones are essential for vocal and acoustic instrument use.
2. Consider using a pickup for acoustic guitar instead of a microphone. This will reduce feedback problems.
3. The sound source must be very close to the microphone if loud monitors are needed.
4. Position the monitor speaker at the null (dead zone) of the cardioid microphone. For most cardioid microphones, this is usually at 180° or 135° (the rear of the microphone) for maximum feedback rejection.
5. Position the main speakers to minimize spill into the mikes that feed the monitor speakers.
6. Be careful when using equalization on the monitor system with a graphic or other equalizer.

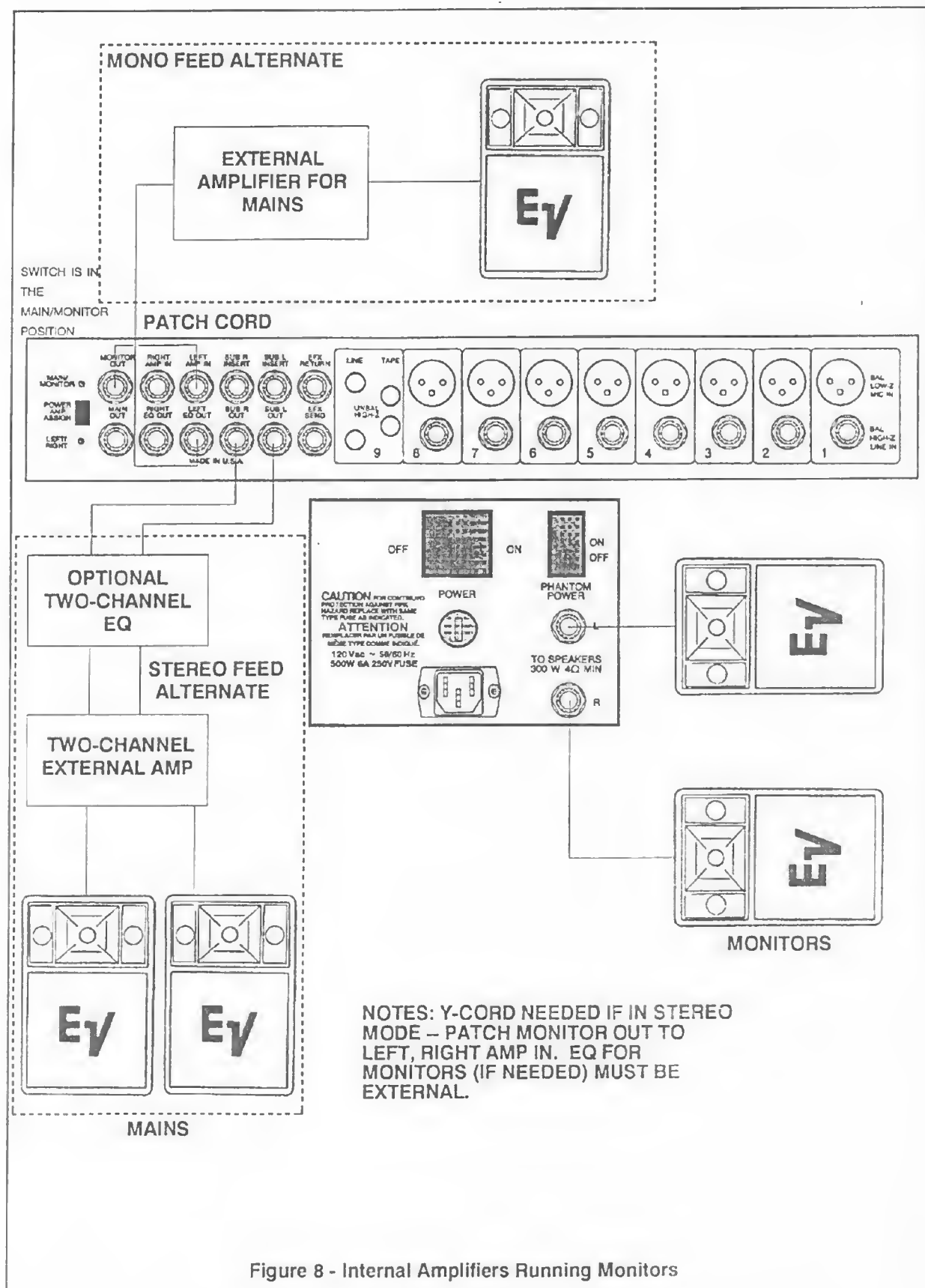
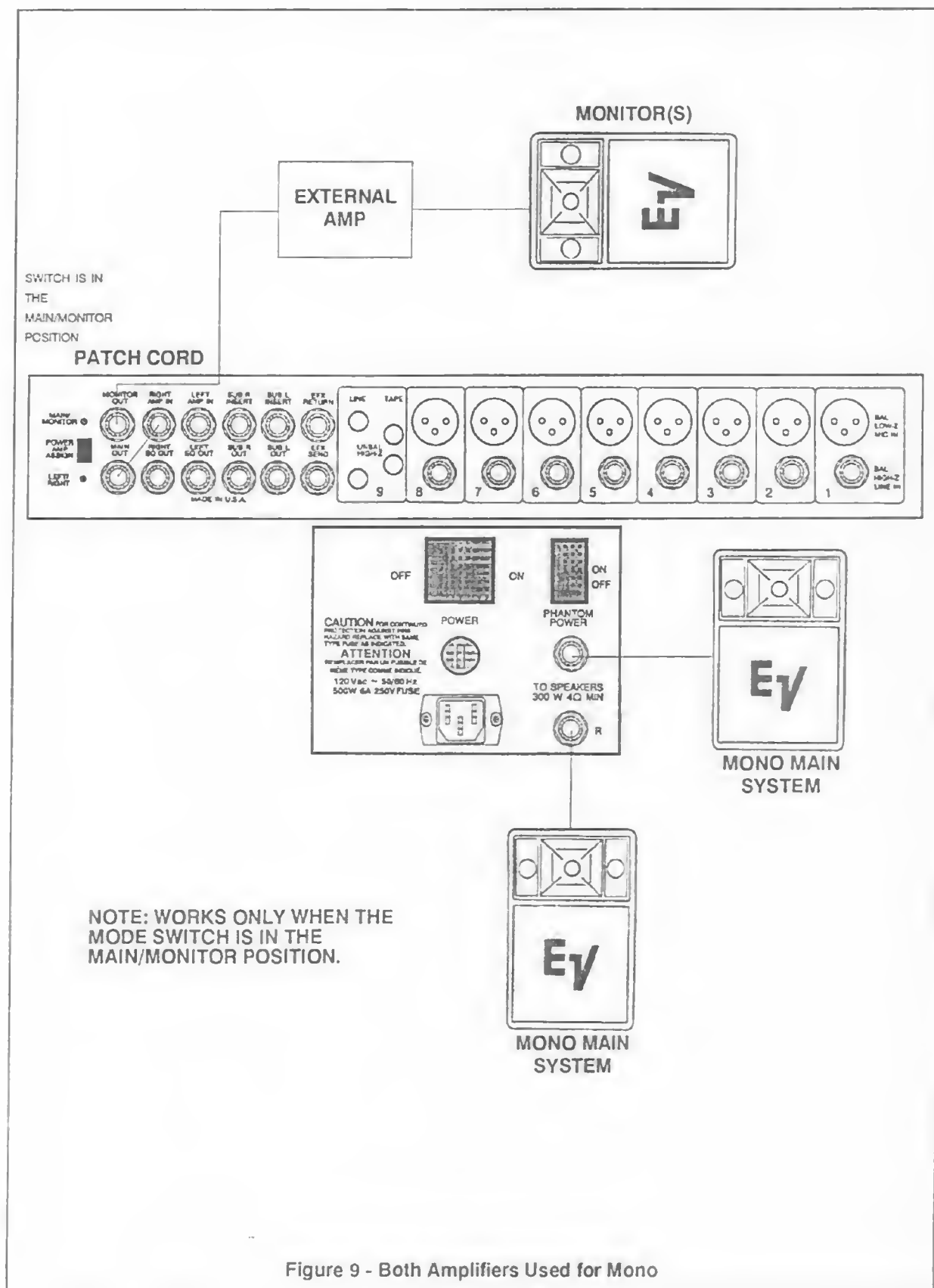


Figure 8 - Internal Amplifiers Running Monitors



The following table is the Lexicon effects programs available with the 200M mixer.

SETUP NUMBER	DESCRIPTION	APPLICATIONS
#1	DOUBLE (40 ms)	SWEETEN VOCALS OR INSTRUMENT
#2	SLAP (65 ms)	SWEETEN VOCALS OR INSTRUMENT
#3	SLAP (90 ms)	SWEETEN VOCALS OR INSTRUMENT
#4	ECHO (115 ms)	SWEETEN VOCALS OR INSTRUMENT
#5	ECHO (148 ms)	SWEETEN VOCALS OR INSTRUMENT
#6	ECHO (180 ms)	SWEETEN VOCALS OR INSTRUMENT
#7	ECHO (220 ms)	SWEETEN VOCALS OR INSTRUMENT
#8	ECHO (250 ms)	SWEETEN VOCALS OR INSTRUMENT
#9	MULTIPAN 1	SWEETEN VOCALS OR INSTRUMENT
#10	MULTIPAN 2	SPECIAL EFFECT (GENERAL)
#11	MULTIPAN 3	SPECIAL EFFECT (GENERAL)
#12	METALLIC RESONANCE	SPECIAL EFFECT (FOR PERCUSSION OR VOCALS)
#13	CHROMATIC RESONANCE	SPECIAL EFFECT (FOR PERCUSSION OR VOCALS)
#14	REVERB (SLOW GATE 1)	VOCALS/INSTRUMENT/PERCUSSION - USEFUL TO FILL UP (BUT NOT MUDDY UP) THE MIX
#15	REVERB (SLOW GATE 2)	VOCALS/INSTRUMENT/PERCUSSION - USEFUL TO FILL UP (BUT NOT MUDDY UP) THE MIX
#16	REVERB (FAST GATE 1)	SPECIAL EFFECT (FOR PERCUSSION)
#17	REVERB (FAST GATE 2)	SPECIAL EFFECT (FOR PERCUSSION)
#18	REVERB (INVERSE 1)	SPECIAL EFFECT (FOR PERCUSSION)
#19	REVERB (INVERSE 2)	SPECIAL EFFECT (FOR PERCUSSION)
#20	REVERB (INVERSE 3)	SPECIAL EFFECT (FOR PERCUSSION)
#21	REVERB (BRIGHT SMALL ROOM)	GENERAL USE
#22	REVERB (DARK SMALL ROOM)	GENERAL USE
#23	REVERB (BRIGHT MEDIUM ROOM)	GENERAL USE
#24	REVERB (DARK MEDIUM ROOM)	GENERAL USE
#25	REVERB (BRIGHT LARGE ROOM)	GENERAL USE
#26	REVERB (DARK LARGE ROOM)	GENERAL USE
#27	REVERB (BRIGHT HALL)	GENERAL USE
#28	REVERB (DARK HALL)	GENERAL USE
#29	REVERB (BRIGHT PLATE)	GENERAL USE
#30	REVERB (DARK PLATE)	GENERAL USE

Table 1 - Lexicon Effects Programs

SERVICE SECTION

CAUTION

Hazardous voltages and currents may be encountered within the chassis. The service information contained within this document is for use by Electro-Voice authorized warranty stations and qualified personnel only.

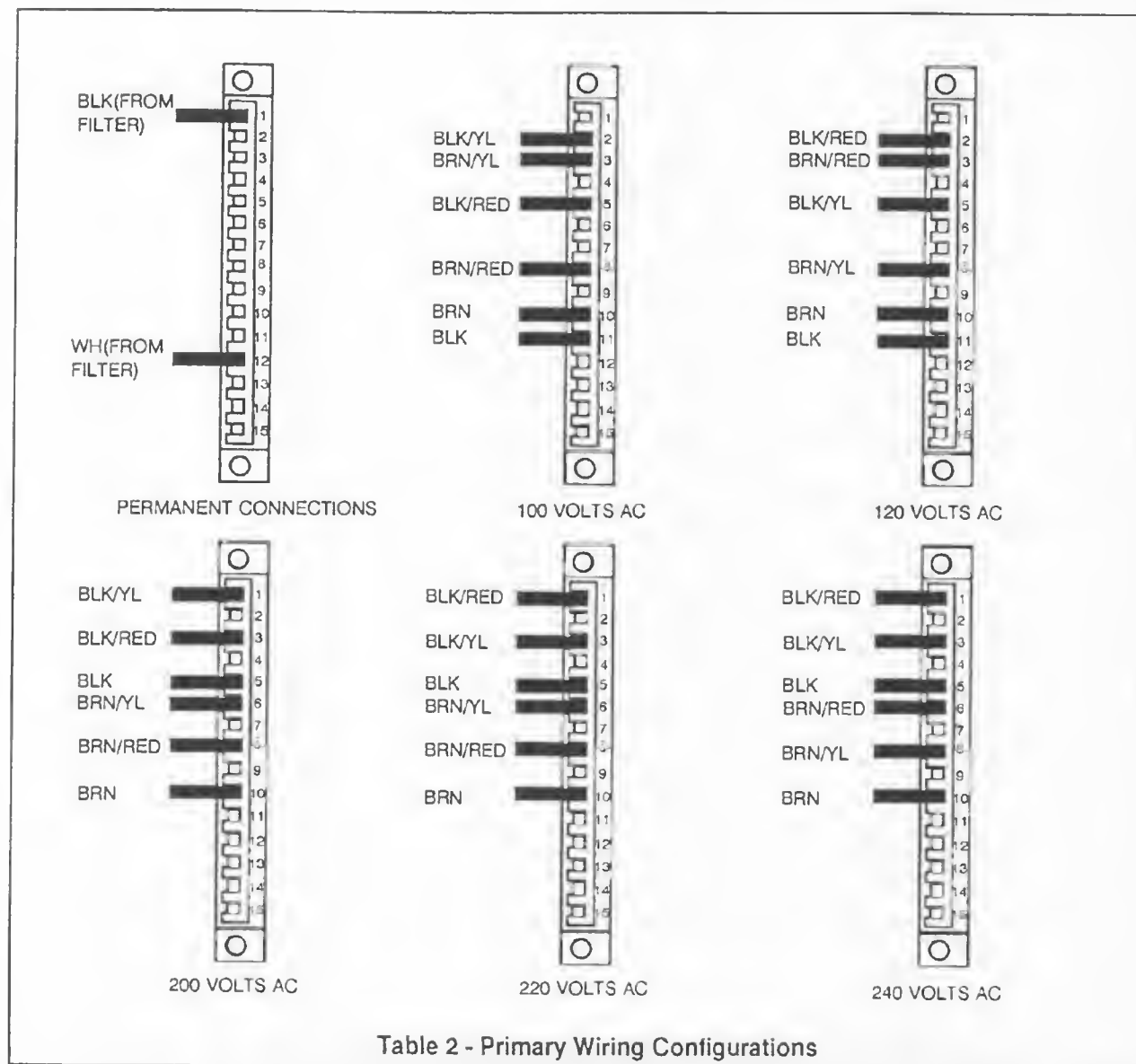
PRIMARY WIRING CONFIGURATION

The 200M mixer will safely operate over a specified range of ac line voltages. This safe operating range depends upon the power transformer's primary

wiring. The Primary Wiring Configuration chart shows the various possible wiring configurations.

Procedure:

1. Press the mixer's POWER switch to the off position and disconnect the line cord from the ac outlet.
2. Remove the twelve screws from the top cover and carefully lift the cover up.
3. The gold-colored power amp cover needs to be removed by unscrewing its eighteen screws. Some of the screws are more accessible by lifting the unit and removing them from the bottom.
4. The power transformer has six primary leads. The lead colors are: black/yellow, brown/yellow,



black/red, brown/red, brown, and black. Disconnect the leads by pulling them straight out until the connectors disengage. Long-nose pliers are helpful to disconnect the wires.

5. Select the desired operating voltage from the Primary Wiring Configuration table and reconnect the primary transformer leads accordingly. Push each lead connector into the terminal block firmly until it locks into place. Unused terminal blocks should be plugged with white connector plugs.

6. Refer to Table 2 and install the correct line fuse.

7. Reinstall the power amp cover and top cover with the screws removed earlier.

IN CASE OF DIFFICULTY

Troubleshooting Notes:

1. Do not use substitute components on the amplifier. Proper operation of the 200M cannot be achieved with substitute components. Use only Electro-Voice supplied replacement components.

2. Do not drive the amplifier at high frequencies without an 8-ohm load attached.

3. Do not bring up the power amplifier on a variac. If power is brought up slowly, abnormal conditions could occur, resulting in further damage.

4. Do not turn the unit off and back on rapidly. Wait at least ten seconds before turning the unit back on, otherwise turn-on thumps may occur.

The problems listed below are typical ones that may be experienced with the mixer.

No power to the mixer.

1. Make sure that the mixer is plugged into an ac outlet and that the outlet has the correct operating voltage. Also, if an extension cord is used, make sure that the cord is not defective.

2. Make sure the POWER switch is on.

3. Check the line fuse on the back panel of the mixer. Unplug the line cord. Unscrew the fuse cap and look at the fuse. If the element is open, replace it with the same type and rating as indicated on the back panel. Plug in the line cord. If the fuse is open and it is replaced, it may open again. If this occurs, unplug the line cord immediately and seek a qualified technician to find the problem. Fuses that burn out when the power is turned on indicate a serious circuit problem.

Mixer operated normally, then turned off.

1. Check to make sure that the line cord plug did not accidentally become disconnected.

2. Check the outside of the case, especially the rear panel. If it is very warm, it is possible that the amplifier's thermal switch may have opened due to the heat. If this happens, turn the POWER switch off and allow the unit to cool. Then turn it on once more

and see if the condition is corrected. Make sure that the unit is placed in a well-ventilated area.

Mixer's POWER indicator glows, but there is no output from the amplifier.

1. Check the speaker connections. One of the cables may be loose, either at the speaker terminals or at the power amplifier output jack. Also check the wire connections inside the plug.

2. Make sure the speaker fuses have not opened (if fuses are being used).

3. The LEFT or RIGHT AMP IN jacks may have a connector inserted. If this happens, the internal power amplifier signal is interrupted.

4. Check the speaker cable for shorted connections.

One of the mixer channels is inoperative.

1. Use another input channel that is operating. If there is still no output, the device is probably the problem. If the unit works in the other input channel, check the Fader and GAIN controls for the dead channel. They may be all the way down.

Channel has a high hum or noise level.

1. Check the input cable for each channel. There may be a broken ground wire somewhere.

Mixer's MAXIMUM POWER indicators glow, but no sound is present.

1. Check the speaker cables and plugs for shorted connections.

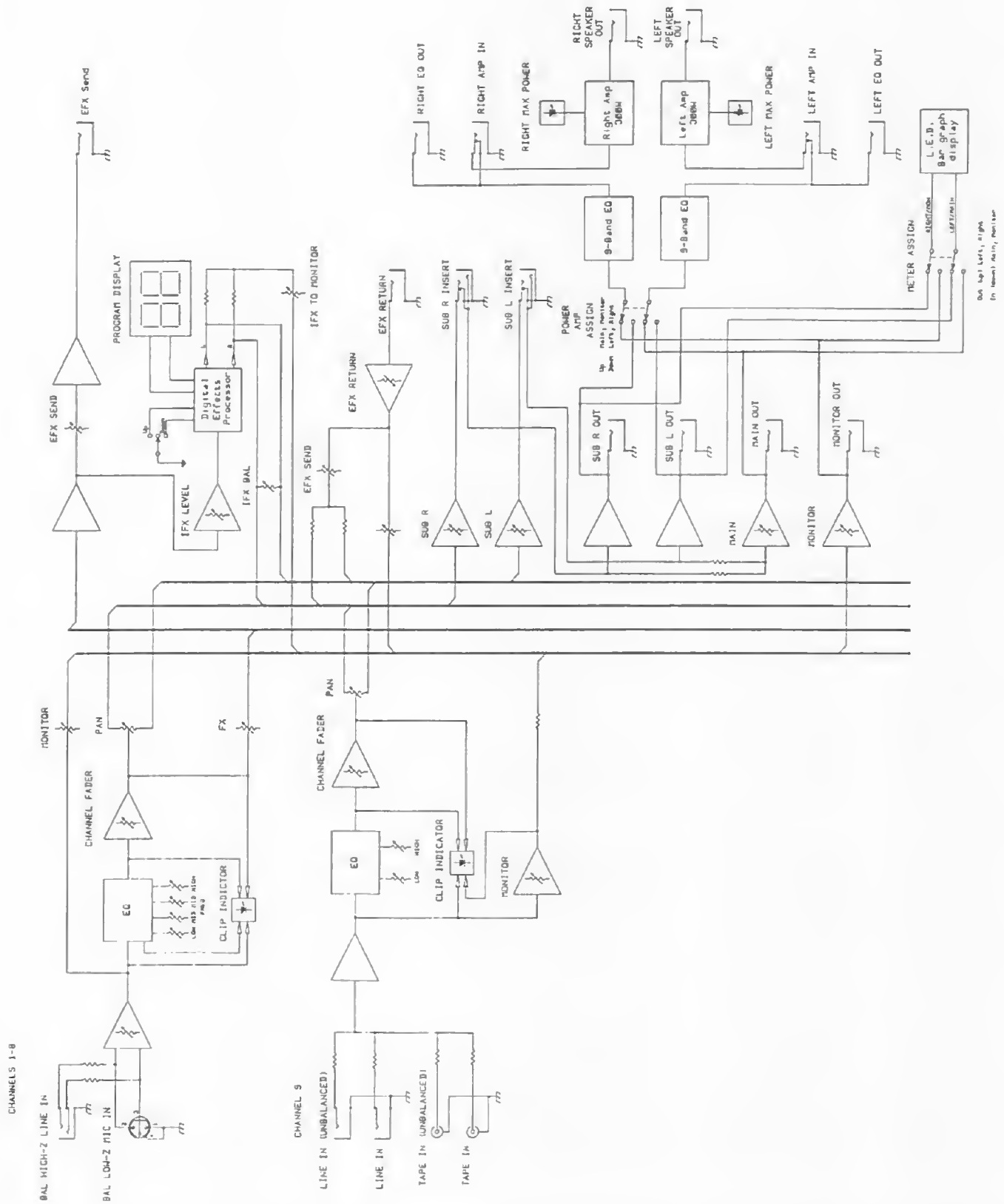
2. Check the number of speakers hooked up to the mixer. Too many speakers will cause the load impedance to be low.

REPLACEMENT PARTS LIST	
PART NUMBER	DESCRIPTION
835005	POWER CORD, DETACHABLE
839007	LABEL, VOLT/FUSE 100 V, 200
839008	LABEL, VOLT/FUSE 240 V, 200
860014	MIXER HOUSING
881018	SHIPPING CARTON
891019	LEFT END CAP
891020	RIGHT END CAP
890008	OWNER'S MANUAL
800239	LEXICON REVERB, PN LRM-5101
855036	DUAL PHONO JACK
851012	SWITCH, SPDT MOMENTARY
870000	KNOB, PUSH SWITCH, BLK CNTRLB BL305
885018	SPACER, POT (EV 70137-RH)
870040	KNOB, SLIDER ECI SPK-4
871022	INSERT, GRAY
871018	CAP, KNOB, LT. YELLOW
870041	KNOB, CONTROL, MED. GRAY
870024	KNOB, SLIDER, MED. GRAY
871013	XLR ESCUTCHEON
870025	KNOB, SLIDER, LT. GRAY
871019	CAP, KNOB, MED. BLUE
871020	CAP, KNOB, MED. GREEN
871023	CAP, KNOB, LT. BLUE
871021	DISPLAY LENS, RED PLEXIGLASS
800224	PCB ASSEMBLY, INPUT

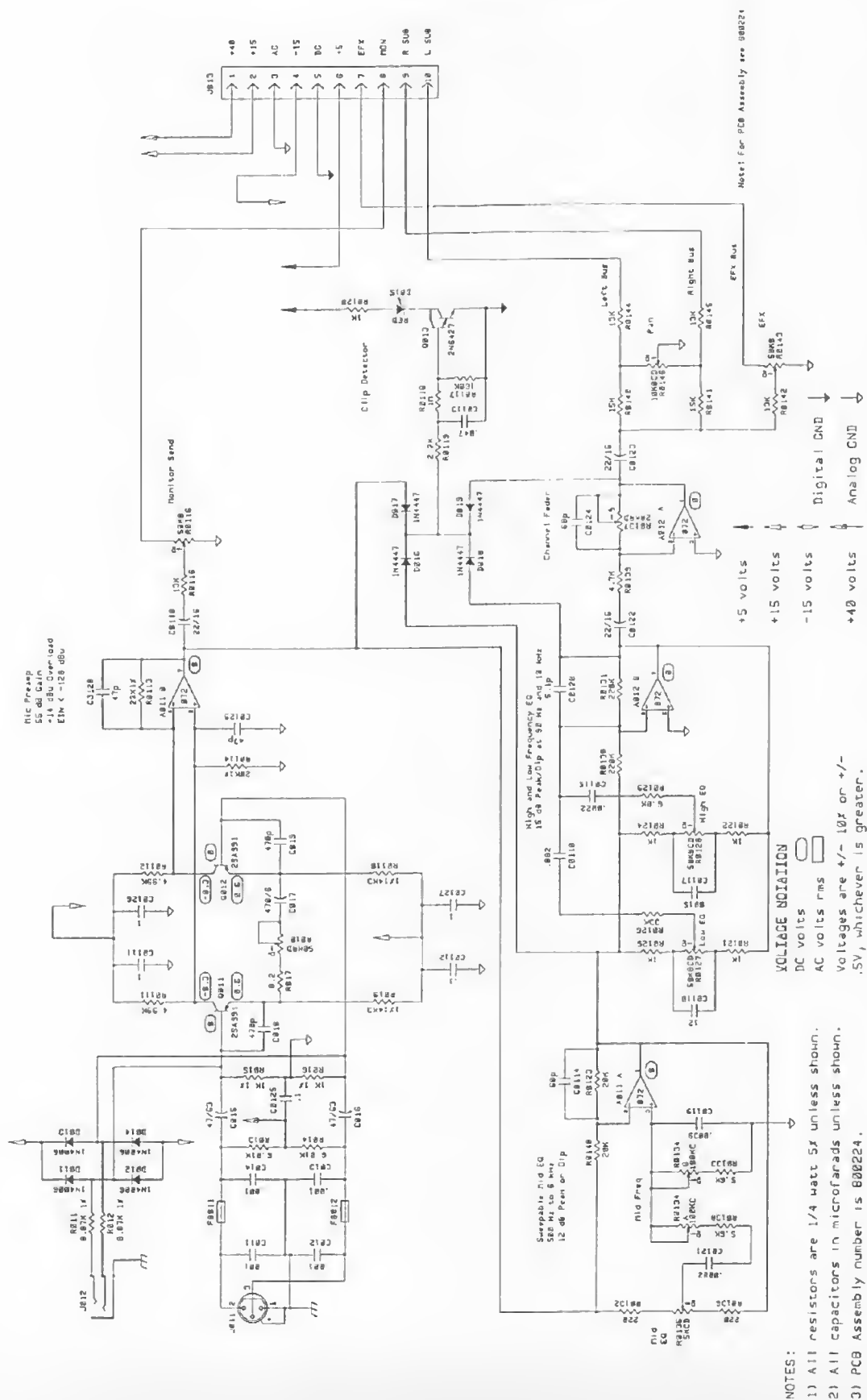
REPLACEMENT PARTS LIST	
PART NUMBER	DESCRIPTION
800225	PCB ASSEMBLY, TAPE IN
800226	PCB ASSEMBLY, OUTPUT
800227	PCB ASSEMBLY, JACK BOARD
855027	JACK, HI-CURRENT, 1/4"
851005	SWITCH, POWER, S/C 100B98NN
851006	SWITCH, POWER, S/C 310B5NN
858000	FUSEHOLDER BODY
858001	FUSE CARRIER, GRAY 120 V
800230	PCB ASSEMBLY, LV POWER SUPPLY
800231	PCB ASSEMBLY, HV POWER SUPPLY
858021	FUSE, 15 AMP, NORMAL BLO CE
800232	PCB ASSEMBLY, FILTER
800235	PCB ASSEMBLY, CAP FEEDTHRU
800228	PCB ASSEMBLY, PWM AMP
800229	PCB ASSEMBLY, PWM CONTROL
800238	PCB ASSEMBLY, PWM SLAVE

Table 3 - Replacement Parts List

INTERCONNECT DIAGRAM



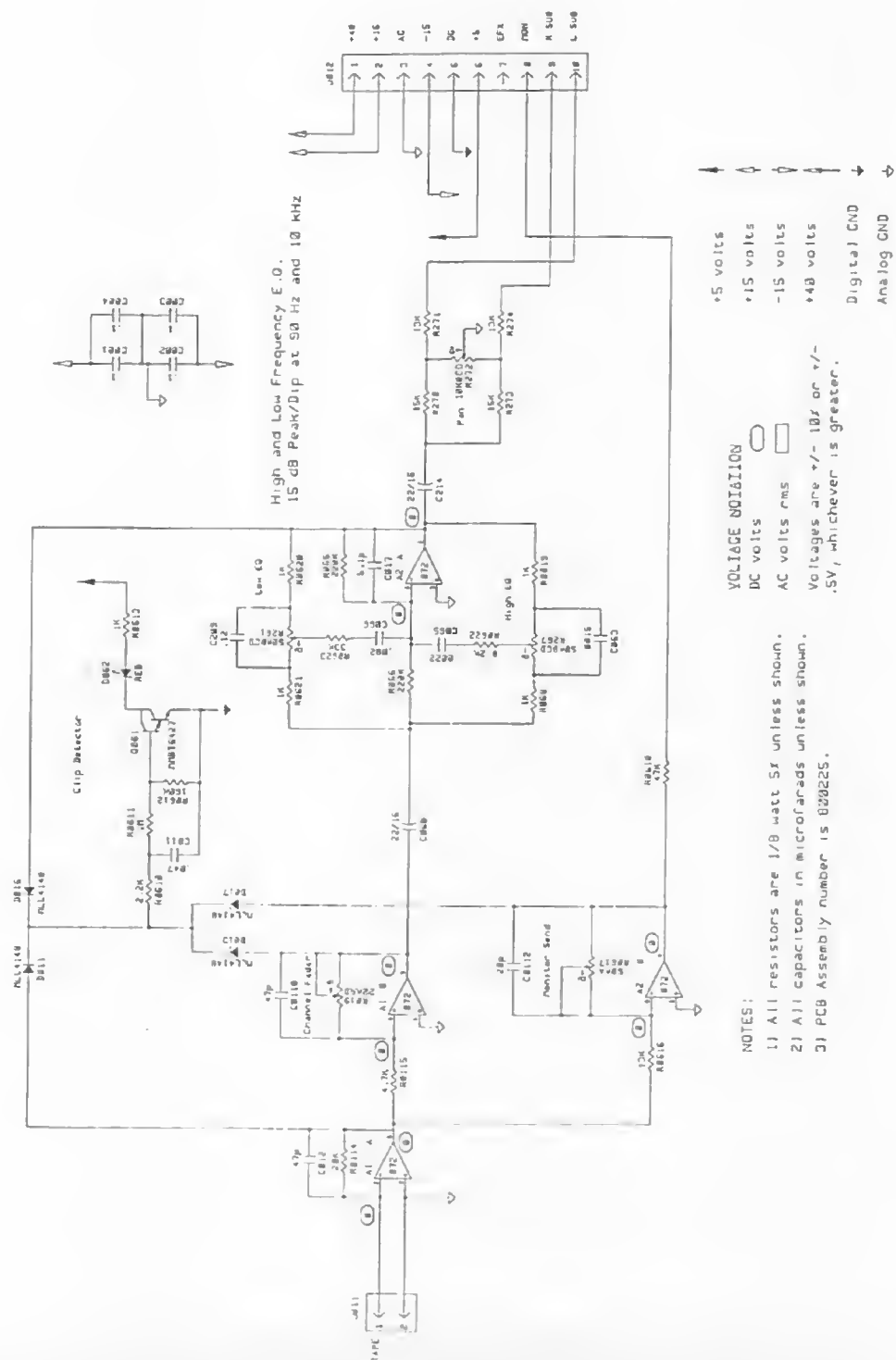
INPUT BOARD



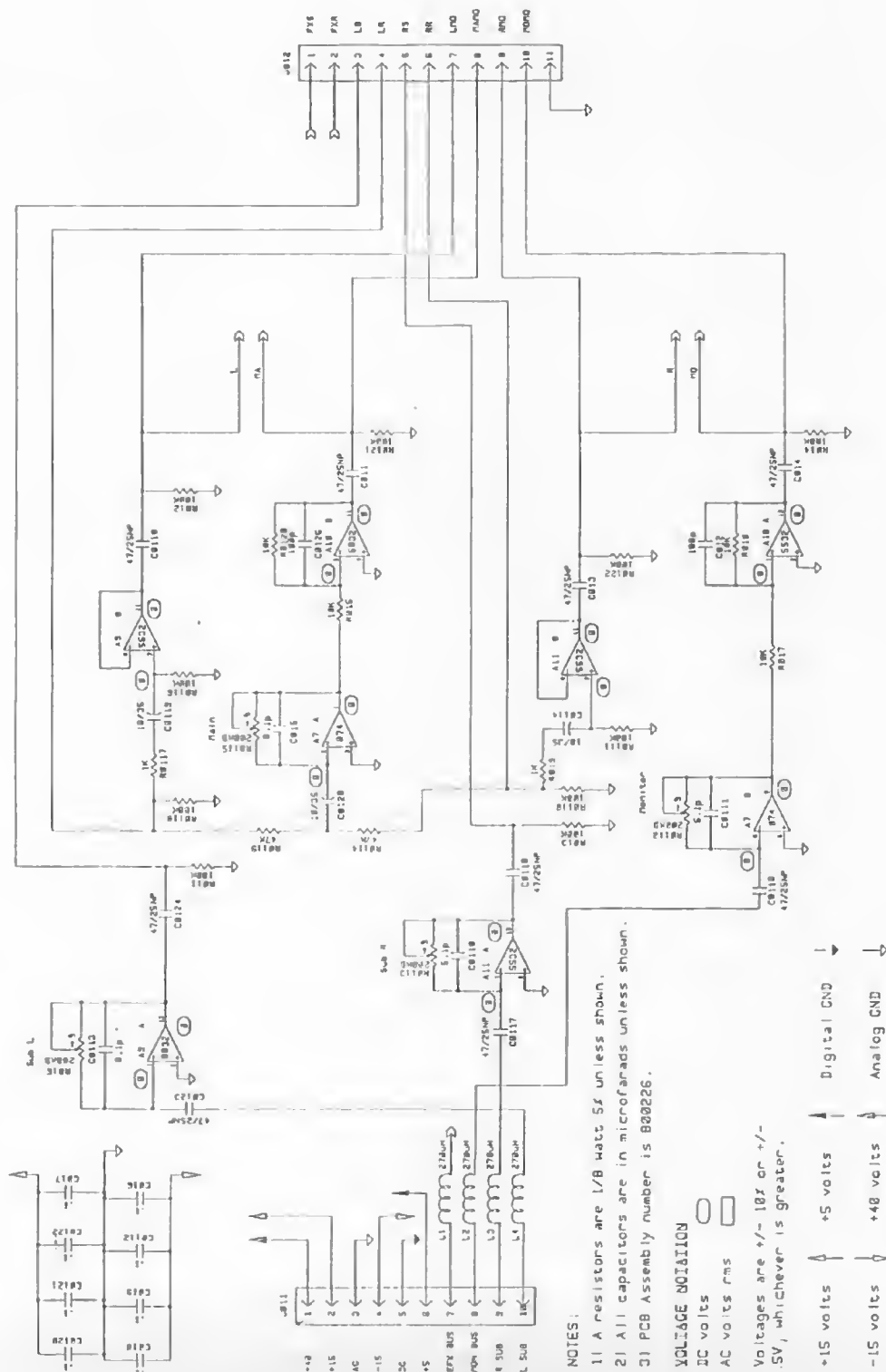
NOTES:

- 1) All resistors are 1/4 watt 5% unless shown.
- 2) All capacitors in microfarads unless shown.
- 3) PCB Assembly number is 800224.

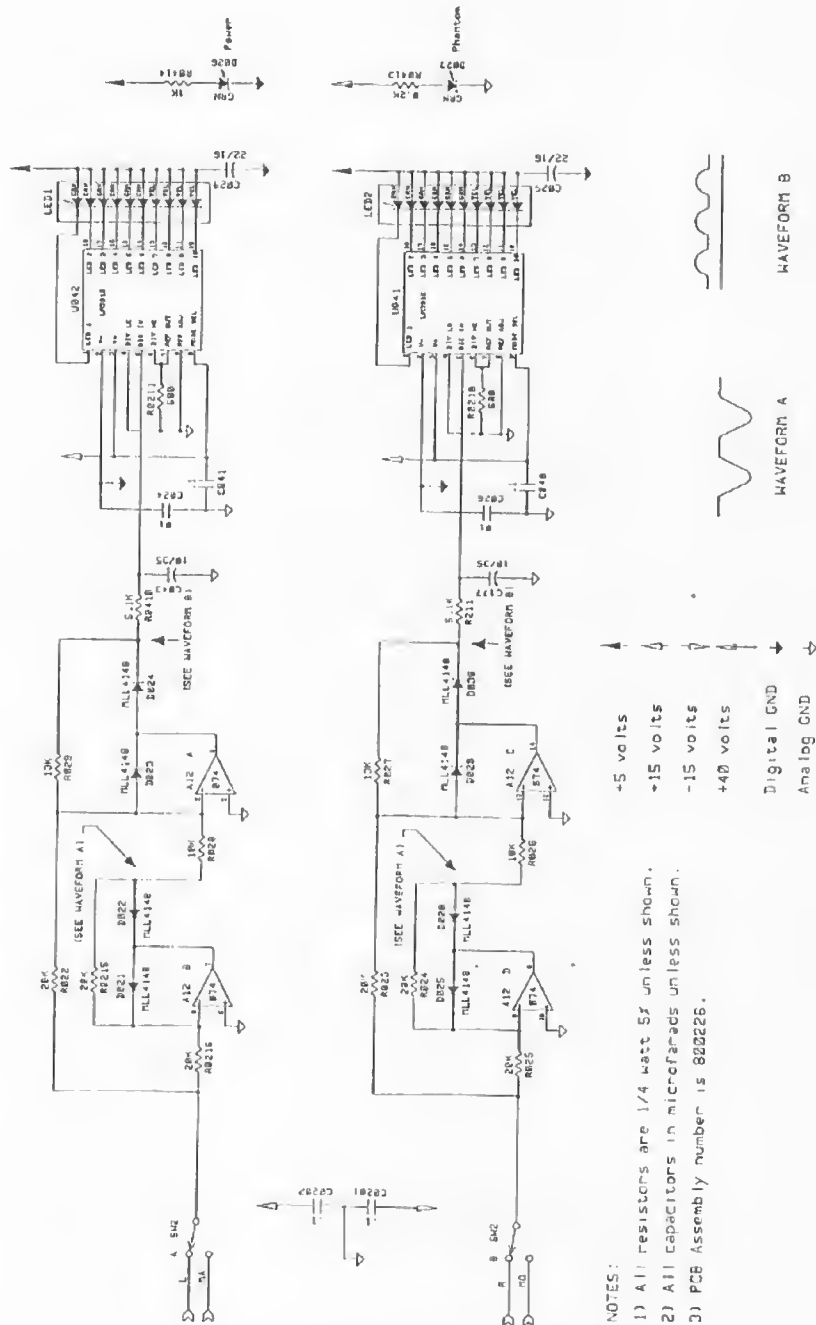
TAPE BOARD



OUTPUT BOARD (SUB L, SUB R, MAIN, AND MONITOR SECTIONS)



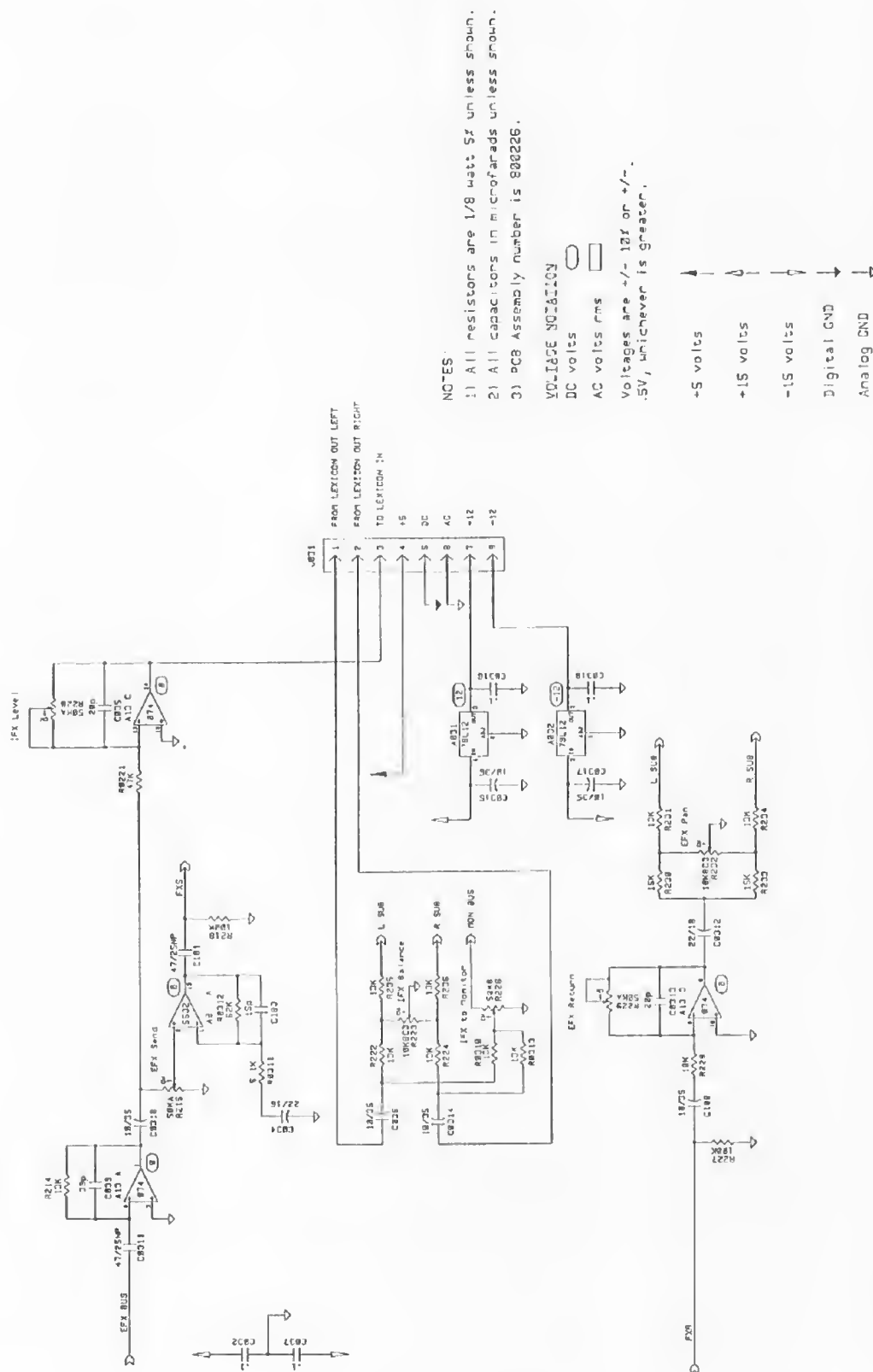
OUTPUT BOARD (BARGRAPH DISPLAY SECTION)



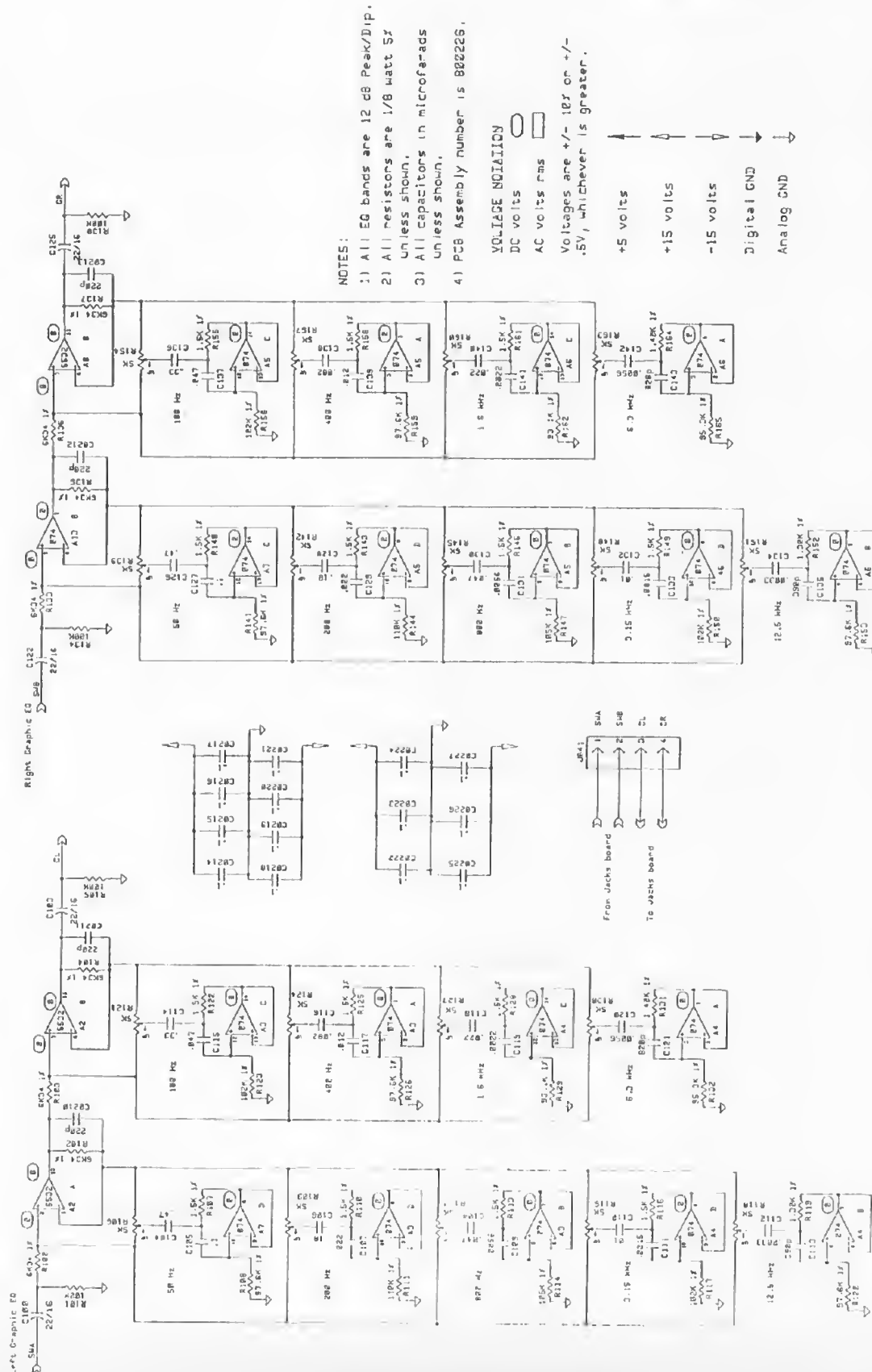
NOTES.

- 1) All resistors are 1/4 watt 5% unless shown.
- 2) All capacitors in microfarads unless shown.
- 3) PCB Assembly number is 820225.

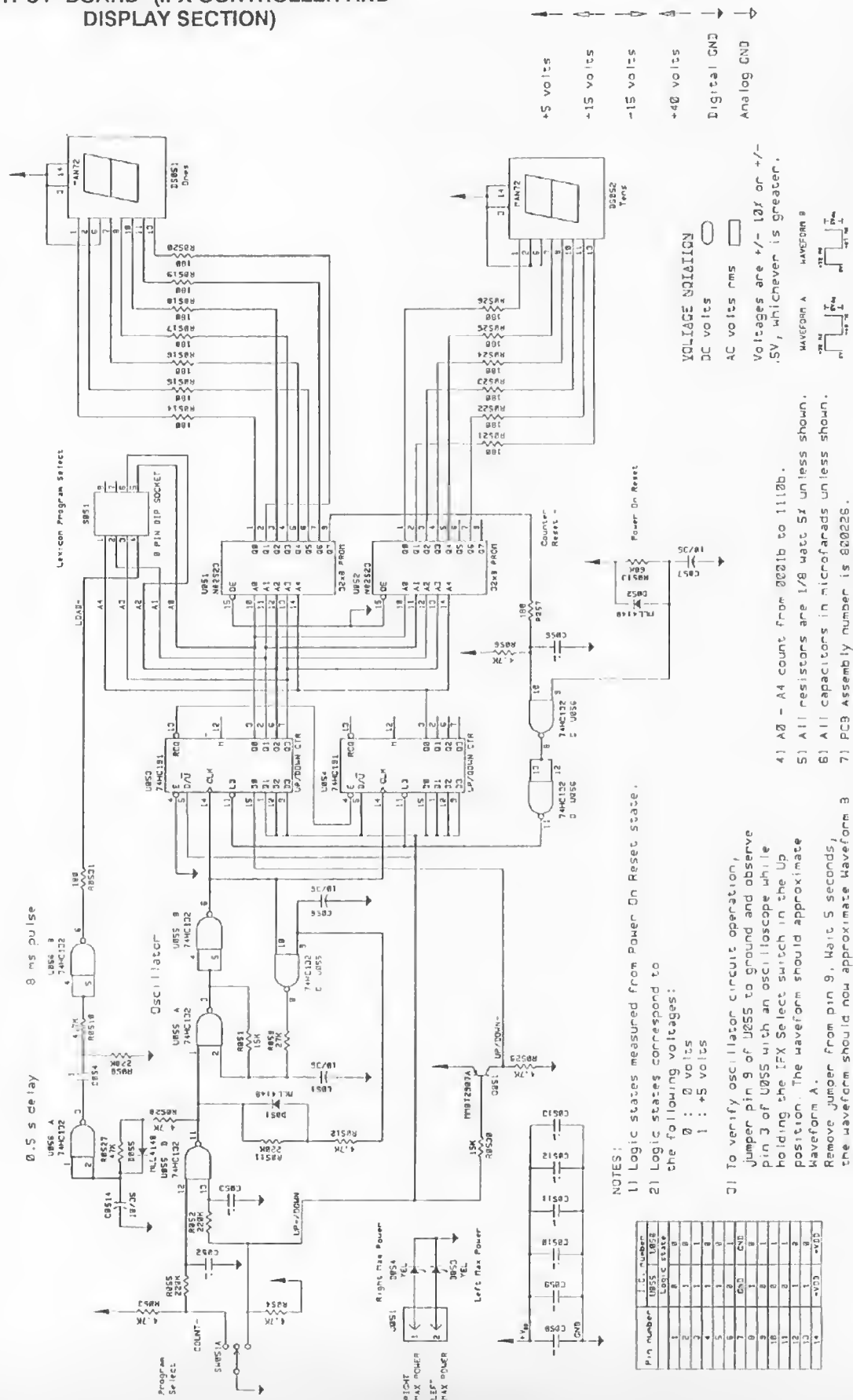
OUTPUT BOARD (EFX AND IFX SECTIONS)



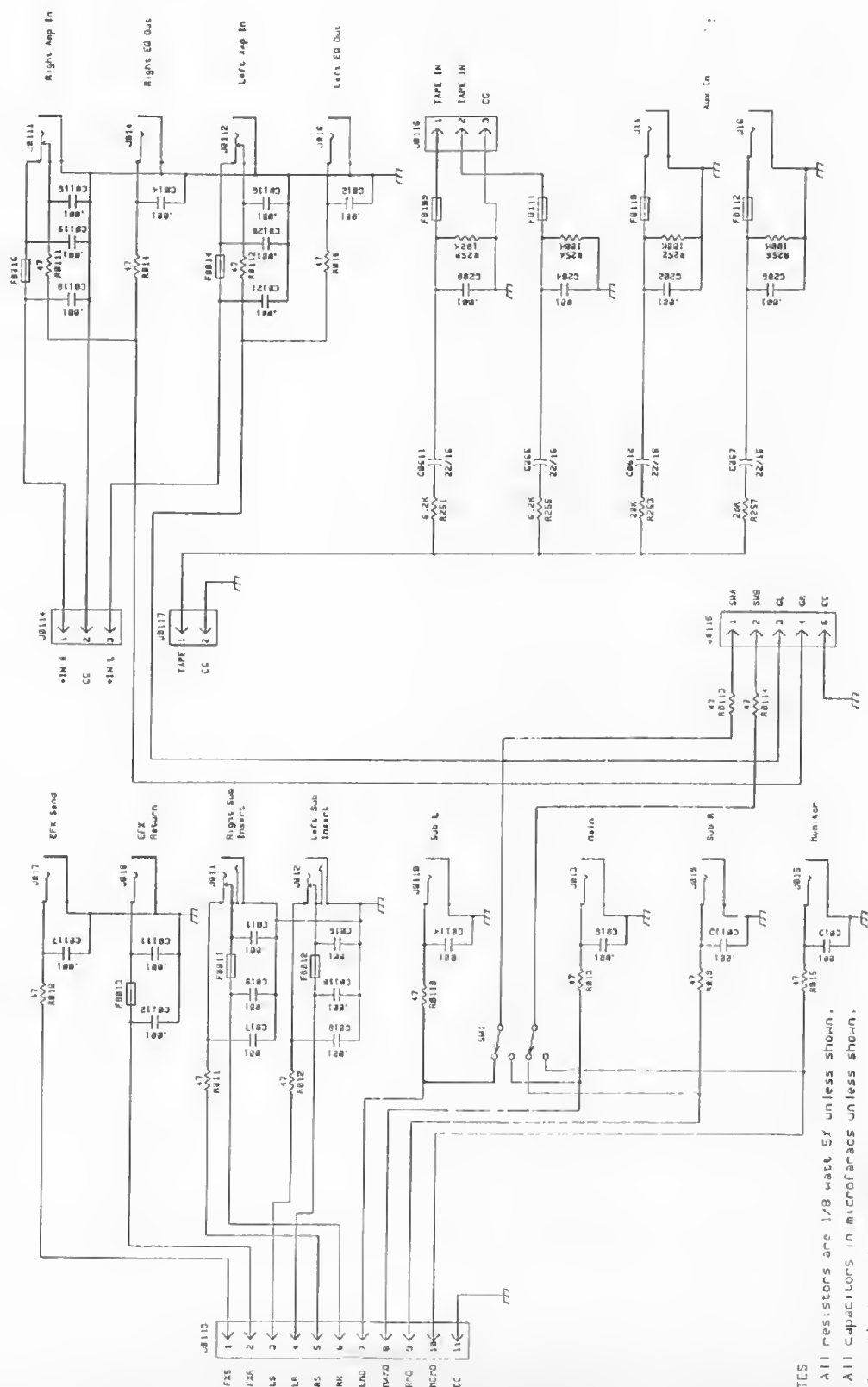
OUTPUT BOARD (9-BAND GRAPHIC EQ SECTIONS)



OUTPUT BOARD (IFX CONTROLLER AND DISPLAY SECTION)



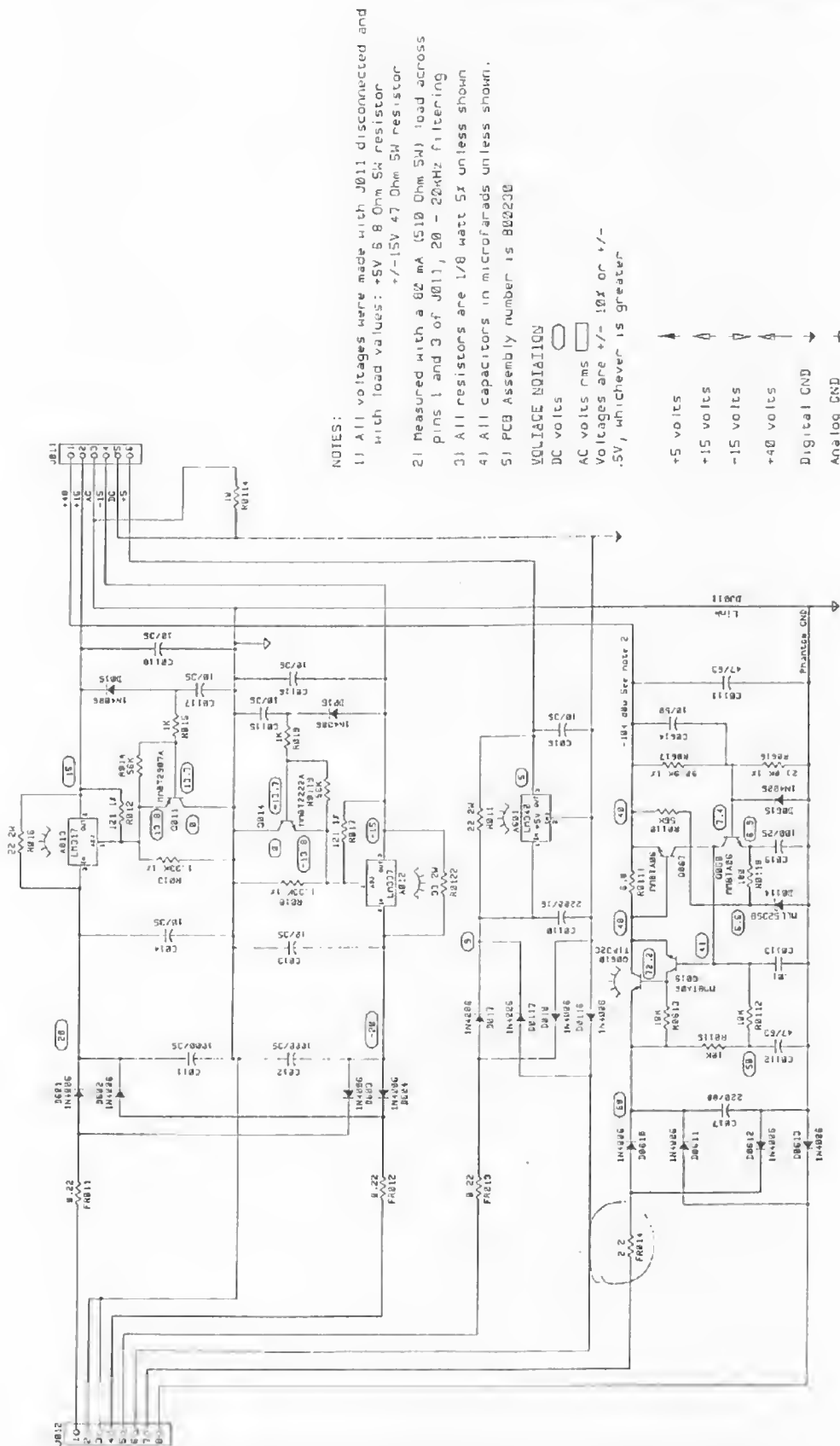
JACKS BOARD



NOTES

- 1) All resistors are 1/8 watt 5% unless shown.
- 2) All capacitors in microamps unless shown.
- 3) For all assemblies use 100MVA.

LOW-VOLTAGE POWER SUPPLY BOARD



NOTES:

- 1) All voltages were made with J011 disconnected and with load values: +5V 8 Ohm 5W resistor
+/-15V 47 Ohm 5W resistor
- 2) Measured with a 802 mA (510 Ohm 5W) load across pins 1 and 3 of J011, 20 - 20kHz filtering
- 3) All resistors are 1/8 Watt 5% unless shown
- 4) All capacitors in microfarads unless shown
- 5) PCB Assembly number is 800230

VOLTAGE NOTATION

DC volts

AC volts rms

Voltages are +/- 10% or +/- .5V, whichever is greater

+5 volts

+15 volts

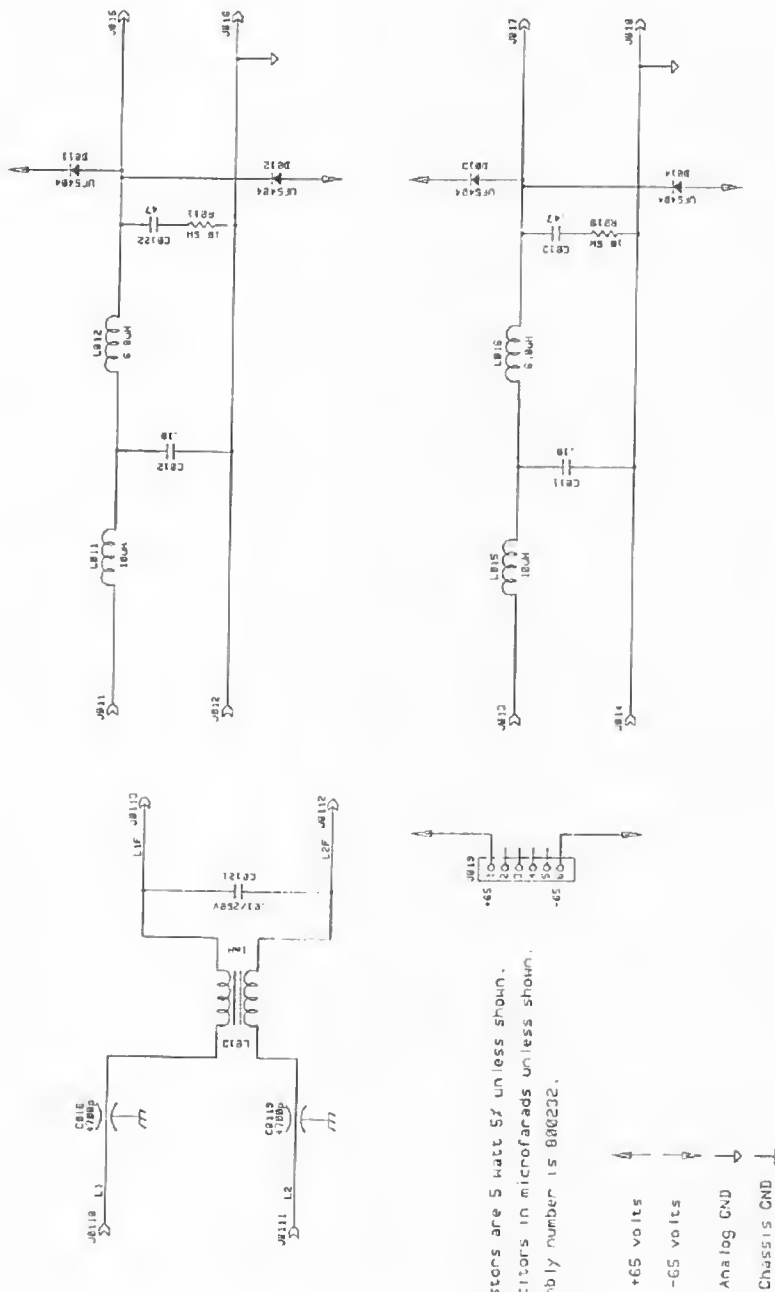
-15 volts

+40 volts

Digital GND

Analog GND

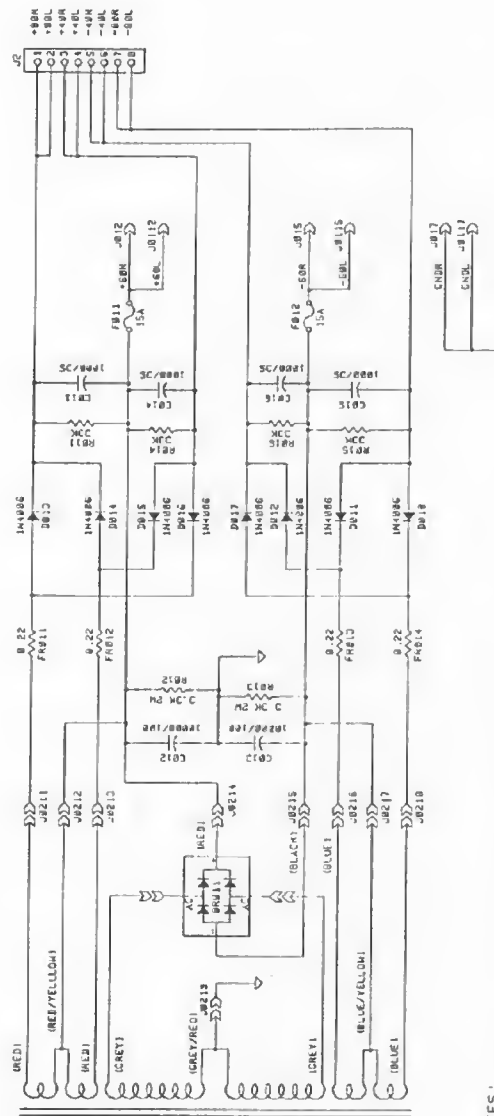
FILTER BOARD



NOTES

- 1) All resistors are 5 watt 5% unless shown.
- 2) All capacitors in microfarads unless shown.
- 3) PCB Assembly number is 880232.

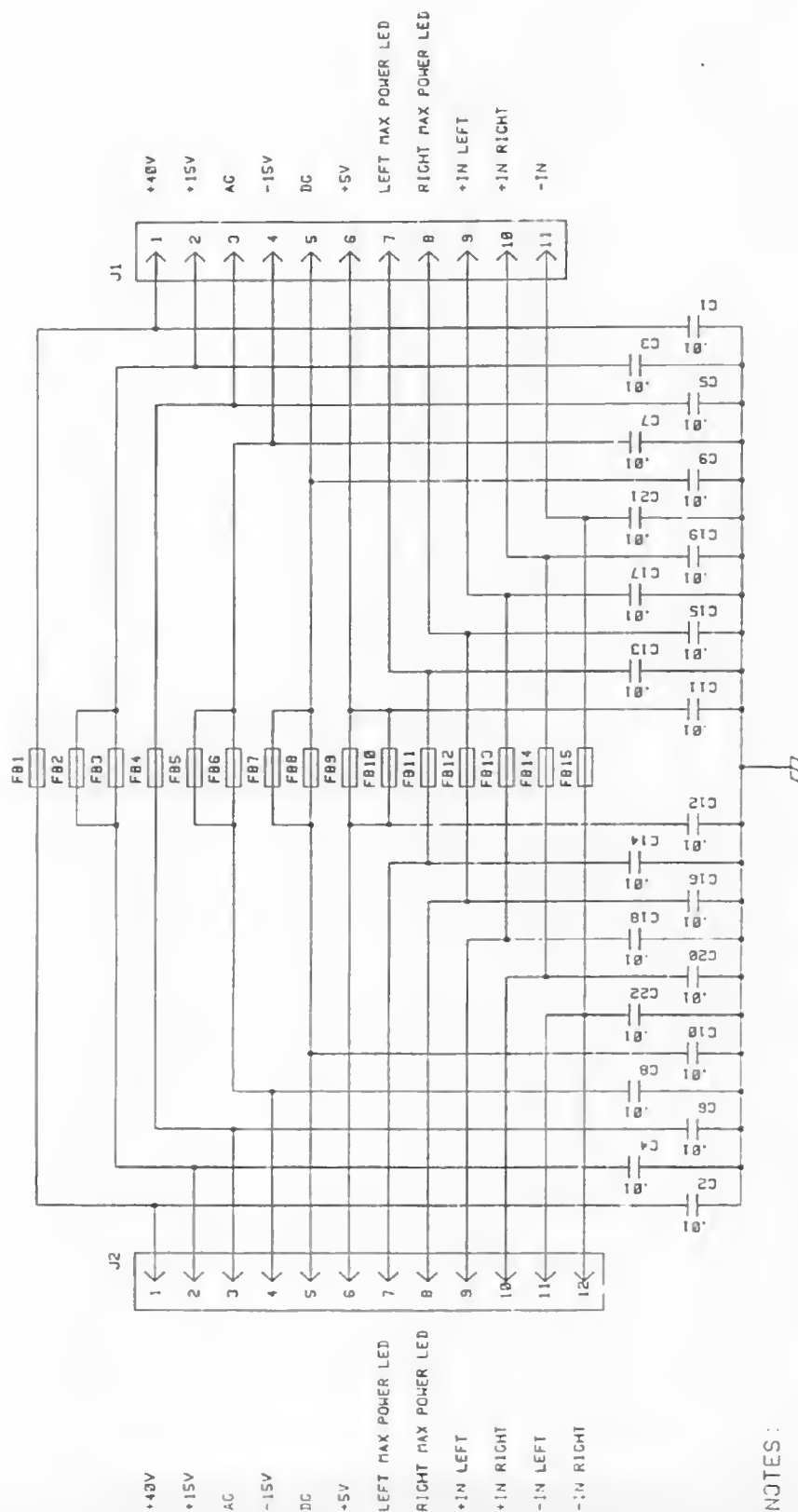
HIGH-VOLTAGE POWER SUPPLY BOARD

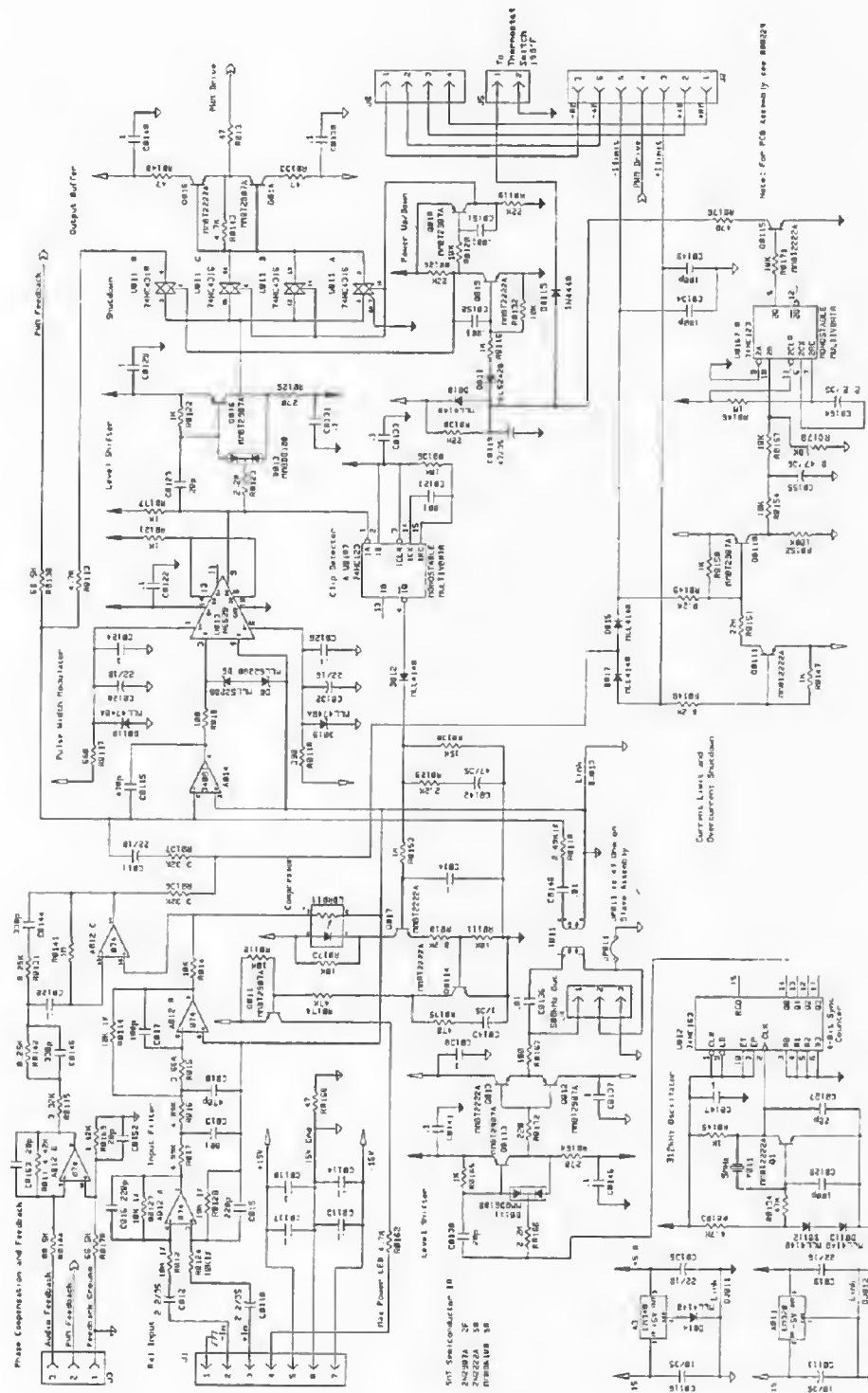


NOTES:

- 1) Supply voltages are typical and will vary +/- 25% depending on line and load conditions.
- 2) All resistors are 1/4 Watt 5% unless shown.
- 3) All capacitors in microfarads unless shown.
- 4) PCB Assembly number is 820231.

FEED-THROUGH BOARD



PWM AMP CONTROL BOARDS
(MASTER AND SLAVE)

WIRING DIAGRAM

